OFFSHORE OIL&GAS

A Chance For Nova Scotians

NOVA SCOTIA
DEPARTMENT of
MINES and ENERGY

OFFSHORE OIL & GAS

A CHANCE FOR NOVA SCOTIANS

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Department of Mines and Energy

Honourable Ron Barkhouse, Minister

Dr. William S. Shaw, Deputy Minister

July, 1980

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SUMMARY

The exploitation of offshore oil and gas could be the most important commercial development of the twentieth century for Nova Scotia. Offshore oil and gas could give Nova Scotians the financial resources to attack deeply rooted economic problems and strengthen weaker sectors of the economy. It is a chance for Nova Scotians.

Oil and gas production would also provide badly needed independence from insecure supply of increasingly costly oil imports. At present, all of the oil consumed in Nova Scotia is foreign produced and large federal payments are needed to maintain a uniform Canadian price to consumers. Reducing or eliminating oil imports would improve Canada's balance of payments and stabilize the cost of oil to Canadian consumers.

Offshore oil and gas developments could also present problems if they are not properly managed and controlled. Experience in other jurisdictions shows us that large oil and gas developments can be highly disruptive. They can lead to inflation because the funds involved are so large in relation to the rest of the economy. They can disturb living patterns (for example, soaring real estate prices). They can harm the environment (Nova Scotians have not forgotten the Arrow and Kurdistan disasters). And they can overwhelm long-established local industries and small business unless these firms plan carefully, with government guidance and protection, to get their share of the action.

Nova Scotia believes strongly that the regulators and decision-makers must have the closest possible direct links to the communities involved, and be responsible solely to the juris-

diction most affected. This is why Nova Scotia insists it would be folly to allow the control and management of the province's offshore resources to slip away from provincial hands.

Nova Scotia has already passed legislation to ensure that oil and gas activities on and off the province's shores will provide the optimum benefit to Nova Scotians. In four separate acts, provision is made to enable the Governor-in-Council to determine the extent of employment of Nova Scotia workers and the use of Nova Scotia goods and services in all phases of exploration, development and production. Provision is made for regulations regarding education and training of Nova Scotians to enable them to participate in the many job opportunities that these developments will generate. Finally, provision is made for the establishment of compensation funds to reimburse individuals who might suffer loss as a result of exploration and development as well as pipeline or gas utility activities.

Nova Scotia has a strong and positive legal case for ownership and control of its offshore resources. Its claim goes back as far as 1621, when King James I granted the Royal Charter of Nova Scotia to Sir William Alexander. In recognition of the utter dependence of the early colonists on the sea for food and transportation, the King included as part of the territory a band of sea stretching about 120 miles southward from our coasts. This band easily encompasses Sable Island and much of Georges Bank and the Scotian Shelf. These boundaries were observed for many years despite numerous conquests and treaty settlements. Canada's Constitution, the British North America Act of 1867, provided that Nova Scotia's limits would be exactly the same after as before Confederation.

The international boundaries of Canada have remained fairly constant since Confederation, but within Canada there have been many changes. As federal territories in the West and North acquired value either through settlement or mineral discovery, they were regularly and without question granted to the appropri-

ate provinces. Indeed, Nova Scotia, as a result of its pre-Confederation division into Nova Scotia and New Brunswick, is the only province which has gotten smaller over the years.

For many years Ontario has asserted ownership and control of the minerals (including oil and gas) under the waters of the Great Lakes and for two decades has benefitted from natural gas production in Lake Erie. These gasfields stretch southward nearly to the international boundary with the United States. Nova Scotia sees no reason why it should not have similar ownership of the resources of its own offshore.

Nova Scotia believes, however, that legal confrontation over the offshore jurisdictional question should only be a last resort. It is confident the matter can be resolved through negotiation with the federal government.

Following are the essential rights and powers that Nova Scotia must have to ensure that offshore development will be directed toward the benefit of Nova Scotia and of Canada. These rights are exactly the same rights that are exerted by the provinces with respect to resources onshore and are spelled out here in order to leave no doubt as to what is required and why.

1. Nova Scotia must have the power to control the pace of development of its offshore resources in order to balance the possible formidable industrial expansion with the preservation of traditional social values and patterns. This requires that Nova Scotia have exclusive right to issue and to set the conditions for all licenses, leases and permits of all kinds which relate to the exploration, development, production, transportation, refining and marketing of petroleum and petroleum products, subject only to the normal jurisdiction of the federal government in extra-provincial trade.

2. Nova Scotia must have the right to a fair offshore resource royalty, rental and other revenue in order to fund education and training programs, to support administrative and regulatory agencies, to reverse the equalization payments and to ensure that industrial activity in Nova Scotia is sustained after the offshore resources are depleted.

3. It is important that Nova Scotia have a working interest participation in offshore and onshore production and related activities in order to obtain a larger share of the resource income for its people. Such participation also provides the government with better knowledge of the industry and thus places the government in a better position to guide its development.

4. Because of our high unemployment, Nova Scotia must have the ability to provide preferences for qualified Nova Scotia workers in the early years of development. This will be coupled with an intensive program of education and training to bring as many as possible to the highest industry standards. Given moderate success offshore, it is expected that the need for such preferences will disappear within very few years.

5. Nova Scotia must be able to determine the conditions under which goods and services are supplied to industry operations in order that Nova Scotians can obtain a share of these business activities. Without some temporary preferences in the early stages of development, Nova Scotians will face extreme difficulty in entering the field against competition from large international firms.

These powers and rights, when taken together, may seem to be tantamount to ownership and, without doubt, they constitute

very substantial control of our offshore resources. But ownership is not a precise term and there are many aspects of control other than these listed above. Some are undeniably federal responsibilities; some are undeniably provincial and some are controversial and open to negotiation.

Prompt resolution of the controversial responsibilities is necessary to prevent delays in petroleum exploration off Nova Scotia. It can be achieved either through constitutional amendment during the current round of constitutional talks or within our existing constitutional framework. The Parliament of Canada, with the consent of Nova Scotia, has the authority to confirm by statute that our seaward boundaries are co-extensive with the boundaries of Canada for the purposes of resource exploration and development, and the statute may include whatever terms and conditions the federal and provincial governments may agree to.

Chapter One

Oil And Gas Potential

1. OIL AND GAS - OFFSHORE NOVA SCOTIA

1.1 Background

Interest in the petroleum potential of offshore areas took hold during the fifties. Drilling and production technology was being developed in the Gulf of Mexico and moved rapidly during this period to the California Coast, the Persian Gulf and Lake Maracaibo. The first exploration on the Scotian Shelf was in 1959 when Mobil Oil undertook an air magnetic survey of the Sable Island area (Figure 1). In the following year Mobil carried out its first seismic program over a 1.1 million acre area under a provincial license. In 1963 Shell Canada licensed 20 million acres from the province and by early 1965 most of the Scotian Shelf was under license to Shell, Mobil and several other companies. In 1971-73 the area under license was extended well down the continental slope of Nova Scotia.

The total area licensed on the Scotian Shelf and slope is approximately 28 million acres. In addition about 8 million acres are under license onshore, in the Bay of Fundy and in Northumberland Strait.

Exploration drilling began in 1967 when Mobil Oil drilled a 15,000-foot hole near the middle of Sable Island. Two years later Shell Canada began an extensive drilling program in conjunction with several seasons of marine seismic research. To date, 146 wells have been completed on the east coast (including Newfoundland) offshore with 71 of those wells drilled in the waters of the Scotian Shelf and on Sable Island. Nine wells were drilled on Sable Island and sixty-two were completed from semi-submersible and jack-up rigs in water covered areas.

The 71 wells completed explored a broad range of geological targets in an area that extends from 60 miles south of Shelburne on the southwest to 60 miles east of Louisbourg.

1.2 Significant Results and Potential

Until 1979 results of exploration on the east coast were considered marginally interesting and the shows encountered were enough to justify additional programs although the pace of exploration had slackened considerably from the early 1970's.

Three significant events in 1979 changed that picture (See Fig. 2). The first, in May, was a significant gas show in the Venture D-23 well located approximately 7 miles

east of Sable Island. The well encountered gas-bearing sandstones between 14,000 and 16,000 feet and tested gas from 3 zones at a combined rate of 40 mmcf/d and 500 bbls of condensate per day. The second, in August, was the announcement by Mobil that a significant oil find had been made at Hibernia some 175 miles east of St. John's, Newfoundland. Public announcements indicate that this well has the potential of flowing some 20,000 bbls of crude oil per day. The third event was the land sale of Georges Bank by the United States Bureau of Land Management, where in December of last year 400,000 acres were put up for cash bonus bid and the United States Treasury received some $816 million from that sale. The first two events provide concrete evidence of important hydrocarbon potential on the east coast. The third provides strong evidence of oil industry opinion of the potential for extension of the favourable trend to Georges Bank.

In addition to the above, drilling on the Scotian Shelf has provided other interesting results within a 50-mile radius of Sable Island (See Fig. 3). Structures that have had good shows of oil or gas include Thebaud, Cohasset, Primrose, West Sable, Bluenose, Citnalta, Onondaga and Penobscot.

Recent geophysical surveys and regional interpretations indicate several exciting geological plays including a geopressured zone in proximity to Sable Island, a Shelf-edge carbonate bank that extends from Georges Bank through to the eastern side of the Scotian Shelf, and updip stratigraphic traps north of Sable Island. As well, under the continental slope are turbidite sand deposits that could hold large volumes of hydrocarbons. For these reasons we believe the Scotian Shelf may well become one of the major oil and gas producing areas in Canada (See Fig. 4).

1.3 Future Exploration Plans

Mobil and Shell are both conducting seismic programs on their Nova Scotia licenses. Mobil has begun a program which will include 1,500 km of detailed seismic in the immediate Sable area. Shell has started its program of 3,000 km of seismic on two license blocks, one north and the other south of Sable Island.

Mobil is completing modifications to the jack-up rig "Rowan Juneau" in Galveston, Texas, and expects to start an appraisal well with that drill rig at Venture this summer. Mobil is also arranging to have a semi-submersible rig drill another structure in the vicinity of Sable Island in October. A third rig, a jack-up, is being built in Singapore and is due on the Scotian Shelf to begin drilling additional wells for Mobil by mid-1981.

Chapter Two
Economic Impact

2. ECONOMIC IMPACT

2.1 Direct Revenue

Governments will get direct revenues through bonuses from license sales, royalties, income tax and participation.

(a) Bonuses from License Sales

This is revenue obtained when oil companies bid on prospective blocks of land offered for sale by the government, currently a significant source of revenue for the producing provinces of Canada. The U. S. Bureau of Land Management received $816 million or $2000 per acre for 400 thousand acres recently sold in the Georges Bank area.

(b) Royalties

They are revenue obtained from production of petroleum and are calculated in many ways. Revenue obtained from royalties in Nova Scotia will consist of a fixed 10% of the value of the petroleum produced plus an additional royalty based on the profits the petroleum company is making. If the company profits increase then the revenue to government will correspondingly increase.

(c) Income Tax

This is the normal federal and provincial income tax and the petroleum industry is required to pay 36% to the federal government and 12% to the provincial government.

(d) Participation

The government has reserved the right to elect up to a 25% working participation in commercial developments with the petroleum companies. This means that the government can become a partner with up to a 25% interest in development and production from any oil or gas field that is discovered.

Figures 5 and 6 indicate the gross revenue from a potential oil field and gas field in offshore Nova Scotia and the divisions of that revenue.

2.2. Major Construction and Operations

Aside from Government revenues, oil and gas development will have substantial employment and income impacts.

Assume 4 trillion cubic feet as proven reserves of produceable gas, with exploration, development and production taking place over a 20-year period.

Employment onshore and offshore together would peak at about 3,000 people in years 5 and 6. Unless additional discoveries were made, employment would fall off fairly rapidly after the peak, with 400 to 600 people employed in year 10 and following years. Direct, indirect and induced income in Nova Scotia would be between $425 million and $700 million in 1980 dollars over the 20-year period.

Most of this economic benefit will go to the construction sector of the economy. The major capital projects required will probably be:

- At least three production platforms as well as an offshore stripping plant to remove water from the natural gas.
- An undersea pipeline to carry the gas to shore.
- A gas purifier and pump station onshore as the first stage of processing and transshipment.
- An overland pipeline and a distribution system to ship the gas to both domestic and export markets.
- Approximately 15 supply vessels, which could perhaps be built or outfitted at Nova Scotian shipyards.

The spinoff effects to other sectors are expected to be quite low since Nova Scotia does not produce the types of steel and equipment that would be used in these developments. Major efforts, nevertheless, should be made to improve our ability to capture these spinoffs.

There is the possibility that discoveries of oil and gas will multiply these figures several times, thus creating employment in the order of 10,000 to 20,000 jobs with proportionate increases in direct, indirect and induced income.

2.3 Supplies and Services

Additional opportunities for Nova Scotians will be the provision of supplies and services to the oil companies as the developments take place. The major potential will be in the areas of steel fabrication, machinery erection, maintenance, communications, catering, consulting and technical expertise, and in operating supply vessels to offshore rigs.

The key requirements for gaining business opportunities through oil and gas development are to concentrate on speed of delivery, reliability of supply, and equipment performance and quality. Many Nova Scotian firms could best tap these opportunities by entering into joint ventures with firms which already have expertise in these fields. In this way, we can capitalize on their technical experience and on their capacity to respond to large orders promptly. There is also the opportunity for Nova Scotian firms to coordinate their activities in a consortia approach so as to compete on large projects beyond the scope of any one firm. The Cape Breton Offshore Trade Association is one example of a group of business people who are exploring all these possibilities.

Chapter Three

Legislation And Management

3. LEGISLATION AND MANAGEMENT

3.1 Legislation

The Government of Nova Scotia has prepared, and passed at the recent sitting of the legislature, legislative authority that will ensure that the oil and gas activities on Nova Scotia lands, including its seabed territory, will provide the optimum benefit to Nova Scotians.

This legislative program includes four Acts (See Fig 7):

(1) Petroleum Resources Act
(2) Pipeline Act
(3) Gas Utilities Act
(4) Energy and Mineral Resources Conservation Act

3.1.1 The Petroleum Resources Act

The Petroleum Resources Act has a wide scope. It covers onshore and offshore areas of Nova Scotia. It sets out the procedures for oil companies to do exploration and, when they make a commercial discovery, to produce and sell petroleum. Following are specific features of the act that are of great importance to Nova Scotia.

(a) the act asserts our right to our resources;
(b) it provides for reasonable sharing of revenues among the federal government, the provincial government and the operators;
(c) it provides for participation by Nova Scotia in oil and gas production;
(d) it assures an opportunity for Nova Scotia workers who are fully qualified for the available jobs, and for Nova Scotia businesses that can supply goods and services to the required quality at competitive prices;
(e) it provides for education and training of our people so they will be qualified for the many job opportunities that will be available;
(f) it will ensure that a high level of research and development in the oil and gas industry will take place in Nova Scotia.

The so-called "local preference policy" has been so widely misinterpreted that a few words of explanation may be useful. First, it should be noted that with respect to labour, the important factor is that the Nova Scotia applicant be fully qualified for the job. In the case of goods and services, the quality and price must be competitive.

The second point is that Nova Scotia sees the local preference requirement as a temporary device to give Nova Scotians a chance to get started in the oil and gas business. Once a foothold is established, they will not need protection. It will be difficult for Nova Scotia businesses to compete against large international service and supply companies in the

early stages. Our requirements will encourage partnerships and joint ventures between Nova Scotians and firms with wide experience in the business. Thus our people will have the opportunity to learn and then to expand further on their own. The labour preference is tied closely to our program of education and training which will qualify our people in advance of development. Our expectation is that unemployment will be soon decreased to the point where preference will no longer be needed and the movement of people will be into Nova Scotia rather than outward.

3.1.2 The Energy and Mineral Resources Conservation Act

The Energy and Mineral Resources Conservation Act will establish the Energy and Mineral Resources Conservation Board (the Energy Board) which would be authorized to regulate the conservation of and to prevent the waste of energy and mineral resources. The Energy Board will control pollution and ensure orderly development, operation and transmission of hydrocarbons. The Energy Board will ensure that safe and efficient practices are followed to protect the interests of Nova Scotians. The Energy Board will appraise the need for energy resources in Nova Scotia and will assess outside markets. It will provide a forum for public hearings on all matters falling within its jurisdiction.

3.1.3 The Pipeline Act

The Pipeline Act provides for regulation of the transmission of oil and gas from the wellhead to the consumer. The act authorizes the Energy Board to supervise pipeline construction in such a manner that Nova Scotians may preserve the natural beauty of our province, the purity of our rivers, oceans, and lakes and the general convenience of the public. This legislation would ensure that in the selection of routes for pipelines, developers would have due regard for these environmental and human factors as well as the safety and convenience of the public.

3.1.4 The Gas Utilities Act

The Gas Utilities Act deals with the establishment of fair prices and rates for gas to be charged by a gas utility serving members of the public in Nova Scotia. The Public Utilities Board of the province will, under this legislation, be given an additional measure of authority sufficient to enable it to properly determine and assess the many factors that have to be considered before a fair and just price for gas to the consumer can be established.

In all these pieces of legislation, provision is made to enable the Governor in Council to determine the extent of employment of Nova Scotia workers and the use of Nova Scotia products in the exploration, development and production of our petroleum resources. Provision is made for regulations regarding education and training of Nova Scotians to enable them to

participate in the many job opportunities that these exciting developments will generate.

Finally, provision is made for the establishment of compensation funds to reimburse individuals who might suffer loss by reason of activities of pipelines, gas utilities and the exercise of petroleum rights by exploration and drilling.

3.2 Management

The management structure set up by these acts is designed to operate and control the three important aspects of oil and gas developments (See Fig. 8).

3.2.1 Ownership responsibilities which will remain in the Department of Mines and Energy.

3.2.2 Regulation of drilling, production, transportation and marketing under a new board which will be named the Energy and Mineral Resources Conservation Board. Regulation of consumer prices within the province will remain the responsibility of the Public Utilities Board.

3.2.3 Impact Control and Support Services which include responsibility for the economic, and environmental impacts and for certain support services which cut across several existing government departments. An inter-departmental committee of ministers has been set up to ensure that the oil and gas activities are planned in a way to minimize any negative effects and to support these activities (e.g. through technical training, business information, etc.) to obtain the optimum benefit of the province. Four sub-committees will provide a sharp focus on the areas that require immediate and continuing attention.

The economic development sub-committee is engaged in surveying the full scope of business development possibilities and is also working on a broad-scale land use plan related to the possible future development of the industry.

The manpower sub-committee is examining training and education that is provided in Alberta and British Columbia and in several American States with a view to designing appropriate facilities for Nova Scotia.

The environmental sub-committee is reviewing potential conflicts with the fishing industry along with the many other environmentally sensitive operations that arise in oil and gas developments both offshore and onshore.

The financial sub-committee will attempt to forecast potential revenue, assess its impact on the provincial budget, on equalization programs and other areas where a significant financial impact can be anticipated.

The central interdepartmental committee will meet at least once a month to monitor and guide government activities in these important aspects of the petroleum industry.

3.2.4 Petroleum Information Centre

The Province of Nova Scotia has a one-stop information centre for all matters related to energy development. The new office, known as the Petroleum Information Centre, will be the principal source of information on employment, business opportunities and other matters related to this province's petroleum resources. Continued exploration for hydrocarbons within the province has prompted the establishment of this central office.

The Petroleum Information Centre (P.I.C.) will be directly responsible to the Interdepartmental Committee on Energy and Mineral Resource Development.

In the years ahead, the P.I.C. will become the front line office for public inquiry into petroleum development within the province. The P.I.C. will establish a manpower resource catalogue of job seekers and job opportunities. This would mean that any Nova Scotian seeking employment whether as rough neck on an oil rig or a marine engineer would be directed to the proper channels by this office.

Corporations, partnerships and individuals in the province will be greatly assisted by the Petroleum Information Centre. The P.I.C. will take an active interest in directing the supply of Nova Scotia goods and services to the appropriate industrial client. Opportunities that will be available as the petroleum industry develops include manufacture of drilling equipment, equipment maintenance, service vessels, transportation services, food supply, accommodation, travel planning, maintenance of navigational aids and equipment, geological and geophysical exploration and a wide scope of specialized talents. The Petroleum Information Centre will be equipped to disseminate the widest possible range of business and manpower information.

This central office will also handle inquiries regarding environmental questions, with a wide range of referrals to government departments and agencies which are currently active in this field.

It is the intention of the government to exercise a local preference policy for those people normally resident in the province. Through an increased and well-directed educational program, it is expected that Nova Scotians will be

able to compete favourably in petroleum development. The Petroleum Information Centre will maintain a detailed list of industrial requirements and training opportunities which will be available to Nova Scotians.

Chapter Four

Ownership And Control

4. OWNERSHIP AND CONTROL

4.1 Rationale

4.1.1 History

(a) Political

Nova Scotia has always been a seaward-looking province. Under and on the waters just off its shores are the industries its people have worked for hundreds of years. Fishing, shipbuilding and ocean trading were the province's lifeblood from the start. Later its miners carved out collieries deep under the ocean floor. More recently the province has become a centre for ocean-related manufacturing and technology. Now there are strong indications that offshore resources can make Nova Scotia an oil and gas producing province as well.

The origins of Nova Scotia's claim to the offshore go back to the 1600's. Our first colonists were utterly dependent on the bounty of the ocean for food and transportation. To help protect this fragile reliance, King James I granted in 1621 the Royal Charter of Nova Scotia to Sir William Alexander, and included as part of the territory of Nova Scotia a band of sea stretching about 120 miles southward from our coasts. This band easily encompasses Sable Island and much of Georges Bank and the Scotian Shelf.

These boundaries were observed for many years despite numerous conquests and treaty settlements. By the Treaty of Utrecht, signed in 1713, France delivered to England possession of all Nova Scotia "with its ancient boundaries" and agreed not to fish between Sable Island and the coast of the land mass.

In 1749 Halifax was settled and a civil government established. The reasons for the settlement and setting up of a representative assembly were stated in an order of the Lord Commissioners of Trade and Plantations to be for "better peopling and settling the said Province, and extending and improving the fishery thereof".

Maps published in 1755, more than 130 years after the original charter of 1621, show clearly that the ancient boundaries of Nova Scotia included vast territories offshore. Two of the maps, one English and one French, are shown in figures 9 and 10.

The boundaries were re-described in the next major settlement between England and France - The Treaty of Paris, 1963 - and that description remained fairly constant through

the various royal commissions of the 19th century until Confederation. The southern boundary was the Atlantic Ocean from Cape Breton to Cape Sable "including all other islands within 40 leagues off the coast, with all the rights, members and appurtenances whatever thereunto belonging".

The pre-Confederation Nova Scotia government exercised its offshore responsibilities and passed many laws regulating piracy, navigation, shipwrecks and criminal activity at sea.

Canada's constitution, the British North America Act of 1867, provided that Nova Scotia's limits would be exactly the same after as before Confederation.

What makes these historical references so important is that the Supreme Court of Canada would rely on them very heavily if it were ever asked to decide the question of offshore mineral ownership. In the British Columbia reference case of 1967, the court found no evidence of any kind that boundaries of British Columbia ever extended west of the Pacific Ocean or that British Columbia ever exercised legislative jurisdiction offshore. With the unique historical realities of the East, and with the long involvement of Nova Scotians and their governments in the offshore areas, this province has a strong and positive legal case.

Legal confrontation, however, is not the only route to settling the offshore jurisdiction question. Provincial-federal agreement is an alternative which has in fact been favoured over the last few years. Instead of relying wholly on events pre-dating 1867, a negotiated settlement recognizing the needs and means of present-day Canada and present-day Nova Scotia seems much more sensible.

It was only four years after Confederation that the provincial, federal and English legislatures all realized the need for a law allowing political settlement of boundary questions. Section 3 of the 1871 BNA Act specifically authorized the federal government, with the consent of the concerned province, to extend that province's boundaries. And this authorization has been invoked many times in the last hundred years, particularly in the northern and northwestern parts of the Country.

In the East, in 1977, the federal government led by Prime Minister Trudeau proposed a provincial 75% - federal 25% split of offshore resource revenue. Taking into account federal income tax revenues, the financial split would have been more like provincial 30% - federal 70% and the federal government would have had effective control over all regulatory and

administrative decisions, including matters such as local preferences and controlling the pace of development of petroleum production.

In 1979 Prime Minister Clark offered Nova Scotia and Newfoundland full ownership and control of offshore minerals, to the same extent as if these minerals had been located on land. This offer was made in the tradition of the extensive provincial land and mineral resources additions from the federal government made possible by the 1871 BNA Act.

In spring of 1980 Nova Scotia's Petroleum Resources Act was enacted. Although it has not been proclaimed, it has prompted considerable discussion, particularly with respect to the wide provincial jurisdiction asserted in its s.7.

The wide jurisdiction is essential to proper provincial management of offshore resources for several reasons. First, the Supreme Court of Canada has emphasized the old English common law rule that the realm ends at the low water mark unless it is extended by legislation. Thus the need for an assertion of jurisdiction. Second, the state of international law and international boundaries is very uncertain and the province will have only indirect input into such things as the settlement of definitions of the Continental Shelf and the settlement of the U.S.-Canada boundary. What we need to do as a province is to ensure that we have extended our jurisdiction as far as we possibly can within the framework of the international context and within the framework of the Canadian constitution.

We feel strongly that Nova Scotia's southern boundaries are and must be co-extensive with the boundaries of Canada, and we have adopted the idea of the limit of exploitability from the only definition of the mineral rights boundary now in force; it was set in the 1958 Geneva Convention on the Law of the Sea. The definition may be changed in the future but it is likely that any new definition will restrict the territory of the Continental Shelf and consequently the jurisdiction asserted in the Petroleum Resources Act will not fall short of any jurisdiction recognized by international law.

Our jurisdiction can extend no further than international contraints will allow, for these international restraints affect a province's boundaries equally as they affect the boundaries of Canada. A province can only legislate "within the Province" by s.2.92 of the BNA Act, and our position is that

historically, legally and equitably, Nova Scotia's boundaries offshore shall be no less and no more than the boundaries of Canada.

(b) Physical

The physical boundaries of Nova Scotia and its relative position to the world have not always been as we know them today. For example, Figure 11 is an illustration of the land mass exposed during the last ice age as recent as 18,000 years ago, barely a moment in geological time. As glaciers developed the water to create the ice was taken up from the oceans lowering the sea level several hundred feet. As can be seen from this illustration a land mass equal to the size of Nova Scotia was present seaward from the present land boundaries. Even more striking is the position of Nova Scotia relative to the rest of the world some 150 million years ago. Figure 12 illustrates the closeness of Nova Scotia and Africa and shows that the ocean or sea present in middle Jurassic time bears little or no resemblance to that of today.

These figures are provided simply to indicate that land masses and shorelines are not fixed and fundamental features but are constantly changing and will continue to change in the future.

4.1.2 Economic, Social and Environmental Impacts

The exploitation of offshore oil and gas could be the most important commercial development for Nova Scotia since the nineteenth century. In the context of the Canadian Federation, large scale oil and gas developments can alter significantly the relative position and self-perception of provinces. Oil and gas developments do not mean that all economic problems disappear. However, energy developments could give Nova Scotians the financial resources to attack deeply rooted economic problems, in much the same way as royalty incomes have given Alberta the capabilities to support organizations such as the Alberta Opportunity Company. The real importance of oil and gas - as is very widely recognized in Western Canada - lies in the extent to which it can be used to stimulate development elsewhere in the economy because, inevitably, the resource runs out. (Figure 13)

These oil and gas developments have the potential for major financial benefits for Canada while correcting serious deficiencies in Canada's oil supply policy in relation to the eastern provinces.

Canada's national oil supply policy, as it evolved during the 1950's and 1960's, sought the lowest cost supply within the Canada-U.S. market. Thus, instead of extending oil pipelines eastward to the Atlantic Provinces, Western Canada oil was sold into western and central United States and the Atlantic Provinces

were supplied from foreign sources. When oil prices escalated in the 1970's, Canada responded by blending the cost of domestic and foreign oils to obtain a more or less uniform national price. For several years the higher cost of foreign oil to Canada was offset by a federal excise tax on oil exported to the U.S.

Unfortunately, Canadian production began to fall during the early 1970's and by 1975 was less than total Canadian demand. The deficit in domestic oil supply has increased rapidly since 1975 and now averages about 400,000 bbls/day. The cost of blending foreign and domestic prices to maintain an artificially low national price, is about $22 per barrel imported which approaches an annual rate of $3 billion.

Because national oil policy has determined that the imported fraction of the national oil supply was to be directed to the Atlantic Provinces and Quebec, there is a common but erroneous idea that the payments made to refiners, in order to bring the cost of foreign oil to the national price, constitute a subsidy to the Atlantic Provinces and Quebec. It is in fact a subsidy to the entire country which results from a deliberate decision by the federal government to make up the national deficit in oil supply by directing all the foreign oil to the Atlantic Provinces and Quebec.

A major and largely ignored effect of this policy was to place the Atlantic Provinces and Quebec in an exceedingly precarious oil supply situation. This part of Canada faces the prospect of a sudden disruption of oil supplies due to political events in the foreign supply regions. The situation is intensely aggravated by the fact that, in great emergencies, there exists no effective physical mechanism to share Canada's oil with the eastern provinces.

It is obvious that large oil and gas production from our offshore area would make an important contribution to the improvement in Canada's balance of payments; it would tend to stabilize the national price of oil and gas; it would provide a secure supply to the eastern provinces and contribute to national self-sufficiency.

The potentially beneficial impacts of a major oil or gas development could be negated by the potentially harmful social and environmental impacts of such a development. Experience in other jurisdictions shows us that the large hydrocarbon developments can be very disruptive, leading to inflation (because the funds involved are so large in relation to the whole economy) and disturbing established living patterns (for example, high real estate prices). One needs only to look at the experience of Aberdeen in Scotland to be reminded of the potential social implications of too rapid development. There is also much concern about environmental impact, and the subject was extensively discussed at a recent major conference in Halifax. Discussion centered on the need for intensive planning so that community concerns can be met. Nova Scotians are particularly concerned because of the Arrow and Kurdistan disasters.

The social and environmental impacts of oil and gas developments on communities can only be controlled by regulating the rate and nature of developments in a way that is most responsive to the unique circumstances of those communities. Badly managed oil and gas developments could disrupt established industry and produce gains which would have only short-term impact. Small businesses in particular need government guidance and protection to take advantage of the opportunities offered by oil and gas developments.

It is important therefore that regulators and decision-makers have the closest possible direct links to the communities involved, and be responsible solely to the jurisdiction most affected. Unless this is done, the economic, environmental and industrial effects (many of which are purely local in nature) cannot be satisfactorily managed. And it is the quality of management applied to the resource which will determine the ultimate benefit of the development to Nova Scotia and to Canada.

4.1.3 Equity

a) Pattern of Land and Mineral Resource Additions to the Province

We have examined the history of Nova Scotia's claim to offshore minerals and we have referred to the immense impact that an active oil and gas industry will have onshore. Now we turn to the question of how the offshore government responsibilities should be best divided between the province and federal government - in the interest of Nova Scotians and all Canadians.

The federal government has an essential and undeniable role to perform in the offshore. Our national physical boundaries must be guarded and defended, and the armed forces are without question the proper agency to perform this task. Our national economic boundaries must be protected through the customs and excise branches of the federal government, and revenues from customs and excise duties go into the federal coffers. Another important source of federal revenue is taxation and the federal government will, of course, take a very considerable percentage of all offshore revenues by taxing the income of the petroleum producers. Federal shipping and navigation and fisheries responsibilities carry with them the obligations to provide for environmental protection. Nova Scotia's claim to ownership of the offshore resource in no way diminishes these crucial federal responsibilities and it is clear that the two levels of government will cooperate in their offshore activities, just as they do in practically every other phase of Canadian life.

Just as customs, excise duties and taxation form the basis of federal funding, land and mineral derived revenues form the cornerstone of provincial finance. By s. 92 of the 1867 BNA Act, the provinces were given the power to make laws concerning property and civil rights in the province, and by s. 109 all lands, mines, minerals and royalties belonging to Nova Scotia before Confederation belonged to Nova Scotia after Confederation. And by contrast with the unlimited taxation powers of the federal government, the provinces have only a limited taxation right.

The international boundaries of Canada have remained fairly constant since Confederation, but within Canada there have been many changes. As federal territories in the West and North acquired value either through settlement or mineral discovery, they were regularly and without question granted to the appropriate provinces. Indeed, Nova Scotia, as a result of its division into Nova Scotia and New Brunswick, is the only province which has gotten smaller over the years.

In the original BNA Act of 1867, there was no provision for extending provincial boundaries, but this omission was quickly cured by the 1871 BNA Act, passed by the imperial Parliament of Great Britain, which provided that the federal Parliament of Canada may from time to time, with the consent of the province, increase, diminish or alter the limits of that province. The use of that section has had extraordinary consequences for many Canadian provinces. Figure 14 shows the sizes of Manitoba, Ontario and Quebec in 1873 before any extensions had been granted.

By 1882, Manitoba had already begun to grow (figure 15) and the 1898 boundary extensions of Quebec and Ontario conferred immense land and mineral potential on those provinces (figure 16). In 1905, Alberta and Saskatchewan became provinces (figure 17).

In 1912, the boundaries of Ontario, Manitoba and Quebec were increased to their present limits (figure 18). The dramatic land additions to these provinces between 1873 and 1931 are shown in figure 19. Of all the provinces within Confederation only the Maritime provinces took no part in these expansions, and it may be fairly argued that the shift in economic power from the Maritimes to central Canada is directly attributable to these shifts in the land and mineral resource base. These huge provincial acquisitions were made by federal statutes under the authority of the 1871 BNA Act amendment. And it is interesting to note the position of the federal government at the time of these grants. Apparently consideration had been given to the possible creation of new northern provinces, but the government concluded that climatic and other conditions were such that new provinces were inappropriate. Sir Robert L. Borden, Prime Minister of Canada, stated in the House of Commons:

> "If then, that territory cannot be turned into new provinces, does it not seem the best way to deal with it is to annex it to the existing provinces?"

This had been the federal outlook since 1871 and it continued well into the 20th century. Nova Scotia supports that outlook and considers that it is most appropriate in the present day context of offshore mineral development. (see figure 20)

In 1930, the western provinces of Manitoba, Saskatchewan, Alberta and British Columbia, received, through amendment to the BNA Act by Great Britain's Parliament, all the mineral resources and rights connected to the lands which then fell within their boundaries.

b) The Ontario Precedent

We have discussed the West Coast jurisdiction question and the British Columbia offshore reference case of 1967. But there is another offshore area that has far greater similarities to the Nova Scotia situation. That is the Great Lakes (figure 21). The international boundary, the early settlement, the historical background, the heavy shipping routes and a long standing presence of fishery, industry, and mineral interests all make the Great Lakes a close analogy to the Scotian Shelf. The division of legislative and regulatory responsibilities is handled in a cooperative and sensible way between the federal and Ontario governments.

Figure 21 shows the international water boundary down the middle of the Lakes with Ontario's border coming right down to that line. Ontario's boundaries are co-extensive with Canada's and are therefore consistent with the position we advocate for Nova Scotia. Figure 21 contains a table comparing Ontario's seabed with the seabed of Nova Scotia's Continental Shelf. The area of the seabeds and their average and maximum water depth are comparable.

In the Great Lakes, the federal government is responsible for navigation, shipping, customs, excise, immigration, national defence and other matters specifically listed in the British North America Act as coming within federal jurisdiction. These concerns result in a strong and active federal presence in offshore Ontario. One interesting area of jurisdiction is the fisheries. The federal government has the responsibility to legislate with respect to inland fisheries but Ontario owns the fish. So there are overlapping federal and provincial powers. To avoid duplication and conflict, the federal government enacted a comprehensive set of fishery regulations, but entrusted their administration to the Ontario Minister of Natural Resources. Although federal legislation will always supersede provincial legislation where there is conflicting overlapping jurisdiction, the two governments worked out a cooperative administration giving proper weight to the provincial ownership of the natural resource.

Ontario owns the fish in the Great Lakes, but far more important to this discussion is the fact that Ontario owns the minerals of the seabed - not out to a three-mile limit or a twelve-mile limit, but right out to the international boundary. This ownership has gone entirely unchallenged since Confederation despite the very considerable financial consequences of this ownership.

The most compelling similarity between Nova Scotia's and Ontario's offshore is, of course, the presence of petroleum and figure 22 shows the producing natural gas fields on the Ontario side of Lake Erie. Some of these fields are very close to the international boundary.

The federal government has been content to receive tax revenues from the producers of natural gas from Ontario's seabed, and every penny of royalty revenue has gone to the provincial government of Ontario. The federal government has never contested Ontario's rights of ownership, nor rights to make laws respecting the ownership of the seabed minerals in the Great Lakes. No legal, historical, moral or equitable arguments have ever been made by the federal government to support federal ownership of seabed minerals in Ontario.

We see no reason why the federal government should take any different attitude towards the minerals of Nova Scotia's seabed.

4.2 Recent Events and Status

4.2.1 The 1977 Memorandum and Guidelines

The so-called "memorandum of understanding" of 1977 between the federal government and the Maritime provinces has been repeatedly held up as an example of a good agreement. It may be worthwhile to examine this agreement in terms of three major aspects which were defined in the memorandum and the guidelines that accompany it.

a) Distribution of revenue (see figures 23 and 24)

Let us look at the 75-25 split of revenue. This would have provided for 75% of the revenue to go to Nova Scotia and 25% to the federal government. It does not take into account the income tax levied on the producers of the same oil. If this is done, it will seem that, in fact, the revenue split would be much closer to 1/3 to Nova Scotia and 2/3 to the federal government. Even at 100% Nova Scotia ownership, the federal government share will be very large.

Frequently in the discussion about this memorandum the term "revenues" has been confused with "benefits". In fact, the agreement deals only with revenues and not with benefits in general. Revenue is only one benefit and the agreement does not touch any other major benefits such as local preferences for labour and business, education and training, and research development in the oil and gas industry. Even more important, the agreement totally ignores the potential disadvantages of a massive industrial development that could come from large scale offshore petroleum production. We believe the pace of development must be controlled by Nova Scotians because Nova Scotia stands to lose the most from mismanagement.

b) Control - The Maritime Offshore Resources Board

Let us look at the matter of who would have control of the myriad effects of major oil and gas developments on our

seabed - under the terms of that memorandum. Keep in mind that 95% or more of the oil and gas developments in the Maritime provinces will almost certainly be on the seabed off Nova Scotia and our land area would be the scene of most of the supporting activities with all its advantages and disadvantages.

How was all this to be managed under that memorandum? By a Maritime Offshore Resources Board made up in this way: three members from the federal government, one member from New Brunswick, one member from Prince Edward Island and one member from Nova Scotia. Nova Scotia would have had one vote in six in a group that was to manage our petroleum resources. This is equivalent to no say at all in matters that could change the character of this province. Furthermore, in the event of a deadlock within the board, the federal minister would have had a final and casting vote to break the tie. In effect, the federal minister controls the board and therefore the resources. We would have had no final authority over:

(a) the rate of development;

(b) the marketing of oil and gas;

(c) ensuring local preferences for our unemployed;

(d) helping our local people to get into the supply of goods and services; and

(e) equity participation in the production and transmission of our petroleum.

In short, we could have been left out of every important decision. We could have been subject to the whims and convenience of people who would not have to bear the disadvantages of such major development.

c) "Favoured Province" Clause

Let us examine the third point that has been put forward by some as an important provincial benefit. A statement in the memorandum said that, if in later negotiations, one province obtained a better deal than that provided in the memorandum, then an equivalent deal would be offered to the remaining provinces. Thus Nova Scotia would be assured of nothing less than the best deal made by any other province. It might be asked: Is it conceivable that such a "better" deal would not be offered? Is it possible that a federal government would engage in any such blatant discrimination?

The memorandum of 1977 was a badly constructed proposal for Nova Scotia.

4.2.2 The Clark Government Letter of Intent

On September 20, 1979, Prime Minister Clark sent a letter to Nova Scotia Premier Buchanan in which he confirmed his government's policy "that the provinces should own the mineral resources off their shores and enjoy legislative jurisdiction over these resources comparable to their jurisdiction over natural resources located onshore, within their boundaries."

The letter said the Conservative party's commitment "was born of a deep appreciation of the feelings and aspirations of the people living in the coastal provinces, who tend to view the ocean not as a barrier but as a frontier, an extension of their livelihood."

The letter confirmed a verbal agreement reached between the Prime Minister and the Premier on September 14, 1979. It said, "We agreed that the province should have ownership of and jurisdiction over the mineral resources off her shores and off Sable Island. Further, I would offer to extend provincial ownership and jurisdiction to the mineral resources of the Island itself."

4.3 A Workable Solution

4.3.1 Nova Scotia's Commitment

The commitment of the government of Nova Scotia is to have full control of its offshore mineral resources and we have outlined the reasons behind this commitment and the steps we have taken to exercise the responsibilities of ownership. The Petroleum Resources Act deals with the way we will encourage exploration for petroleum, control the pace of development, control provincial input of development and production and receive revenues. The Energy and Mineral Resources Conservation Act sets up the Energy Board whose task it will be to make sure all development, production, transportation and processing is safe, efficient, prevents waste, and is environmentally sound. The Pipeline Act will regulate pipeline location and construction and the Gas Utilities Act will regulate the distribution and price of gas to consumers.

And with the very recent and very exciting East Coast offshore petroleum prospects, these measures are most timely. Significant exploration will take place in 1980 and the pace is expected to rapidly increase in the coming years.

4.3.2 Folly of Delay in Agreement

The major concern now is the resolution of the federal-provincial management question. Agreement must be reached with Ottawa, and reached quickly so that the development of our petroleum resources is not restrained. The geological prospects are there, industry enthusiasm is high and the world-wide

need for a stable petroleum supply have never been greater. To slow exploration down now for such an artificial reason as intergovernmental conflict would be to lose momentum and to add years to Canada's goal of energy self-sufficiency.

The Quebec referendum has caused a high interest in constitutional reform. One month after Quebec voted "No" to sovereignty association, the first ministers met to set the course of constitutional revision. They will meet again early in the fall, and the question of offshore mineral ownership will be on the agenda. Action to date on the constitutional front has been positive, but only the most preliminary steps have been taken so far, and to include the pressing question of offshore ownership in with all other constitutional questions such as language rights, amendment formulae and special concessions, may slow own its resolution. The resolution must not be slowed down for any reason.

4.3.3 The Solution

The resolution may be achieved in two ways. The first is through constitutional amendment. While the current enthusiasm and momentum for constitutional reform continues, it is the obvious route for resolution of offshore ownership. By redefining the coastal provinces to include the offshore to the limits of Canada's jurisdiction, and by vesting offshore minerals in the provinces, the constitutional solution would be carried out.

There have been many attempts to revise the constitution, and it is generally a long and intricate process. But it may be that there exists now a climate favourable to revision. We shall with all possible vigour seek confirmation of Nova Scotia's offshore resources through the current constitutional meetings.

But in the event that these talks break down, there is a second alternative - one which does not involve the necessity of constitutional change.

The federal government and Nova Scotia have the power within the existing constitutional framework to extend Nova Scotia's boundaries. And there would be no need to try to determine what any pre-Confederation boundaries may have been, no need to amend the British North America Act, and no need to delay exploration activities.

The power comes from s.3 of the 1871 British North America Act which states:

> "The Parliament of Canada may from time to time, with the consent of the Legislature of any Province of the said Dominion, increase, diminish, or otherwise alter the limits of such Province, upon such terms and conditions as may be agreed to by the said Legislature, and may, with the like consent, make provision respecting the effect and operation of any such increase or diminution or alteration of territory in relation to any Province affected thereby."

We have mentioned this power before and have observed the long tradition of its use. Without it, Ontario, Manitoba and Quebec would have only a fraction of their current land and resource base.

In view of the historical tradition and present day equities and the urgent need to avoid delay in petroleum development, it would be most appropriate to continue the pattern of provincial boundary extension. The procedure would not be difficult.

The House of Commons could resolve at its next meeting to make the boundaries of Nova Scotia co-extensive with the boundaries of Canada in the offshore Atlantic between the U.S. border to the southwest and the St. Pierre-Miquelon and Newfoundland borders to the northeast, upon such terms as may be worked out between the Legislature of Nova Scotia and the Parliament of Canada concerning the administration of the offshore.

The federal-Ontario division of responsibilities in the Great Lakes provides an excellent working model from which to start. After the terms and conditions are settled, the Parliament of Canada would pass an Act which would recite the consent of Nova Scotia and enact the boundary extensions and the terms and conditions agreed to between the two levels of government.

In summary either route to resolution is acceptable to Nova Scotia and we shall continue to press for an early settlement of the provincial ownership question so that exploration and development can continue without delay and so that Canada may soon reach the goal of energy self-sufficiency.

Appendix

Figures 1-24

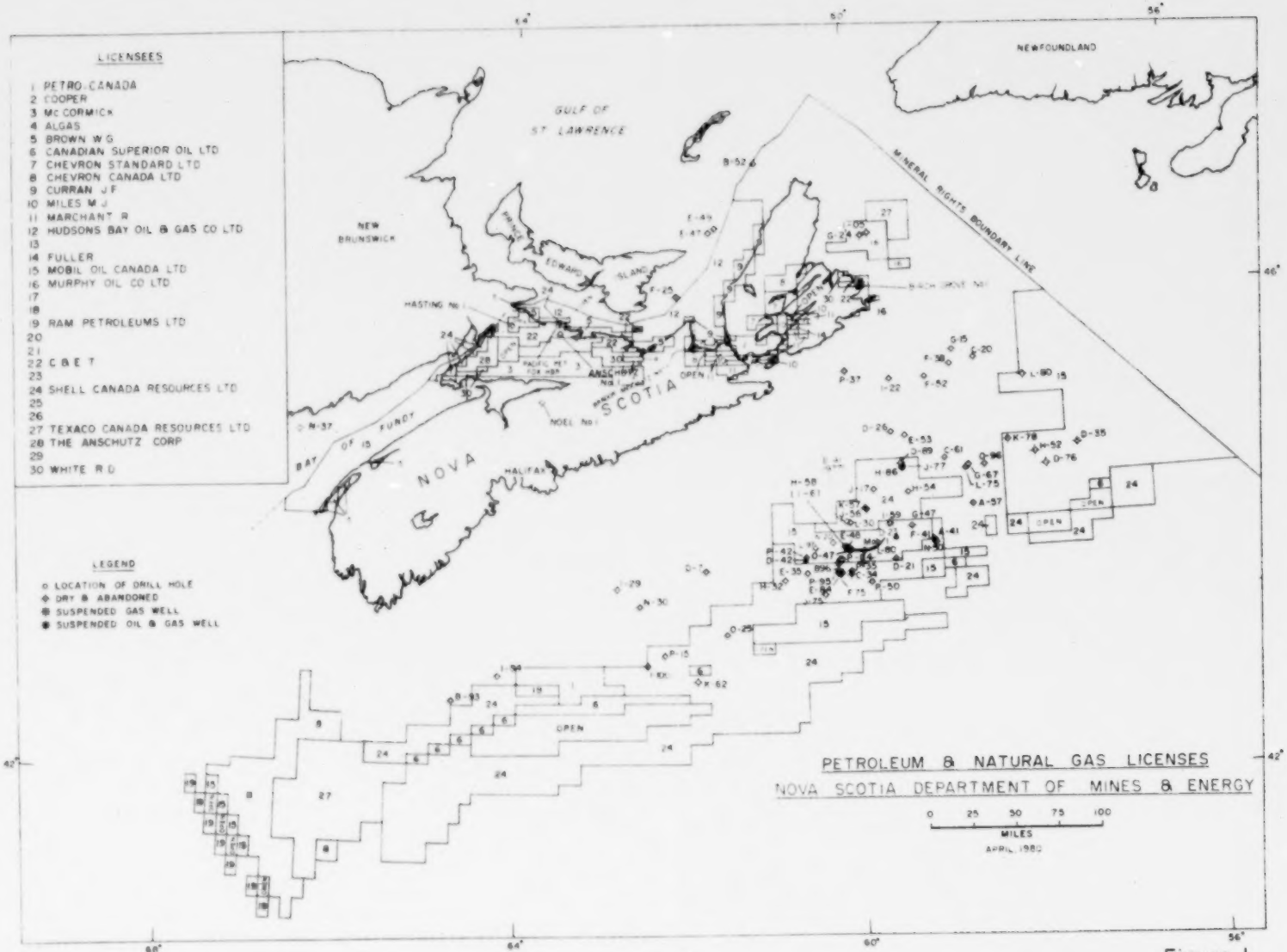
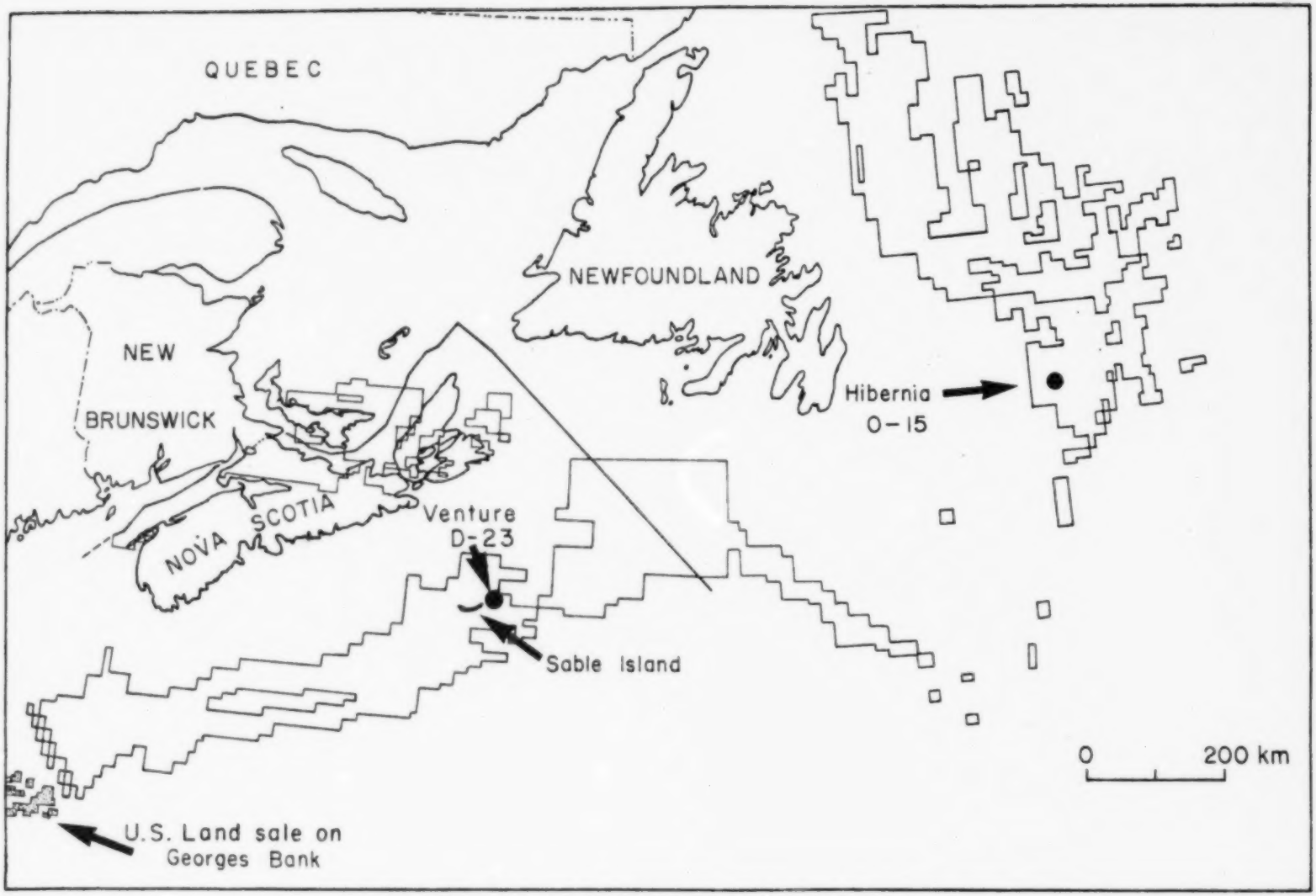

LICENSEES
1 PETRO-CANADA
2 COOPER
3 Mc CORMICK
4 ALGAS
5 BROWN W G
6 CANADIAN SUPERIOR OIL LTD
7 CHEVRON STANDARD LTD
8 CHEVRON CANADA LTD
9 CURRAN J F
10 MILES M J
11 MARCHANT R
12 HUDSONS BAY OIL & GAS CO LTD
13
14 FULLER
15 MOBIL OIL CANADA LTD
16 MURPHY OIL CO LTD
17
18
19 RAM PETROLEUMS LTD
20
21
22 C B E T
23
24 SHELL CANADA RESOURCES LTD
25
26
27 TEXACO CANADA RESOURCES LTD
28 THE ANSCHUTZ CORP
29
30 WHITE R D
LEGEND
LOCATION OF DRILL HOLE
DRY & ABANDONED
SUSPENDED GAS WELL
SUSPENDED OIL & GAS WELL
NEWFOUNDLAND
GULF OF ST. LAWRENCE
NEW BRUNSWICK
NOVA SCOTIA
BAY OF FUNDY
HALIFAX
MINERAL RIGHTS BOUNDARY LINE
PETROLEUM & NATURAL GAS LICENSES
NOVA SCOTIA DEPARTMENT OF MINES & ENERGY
0 25 50 75 100
MILES
APRIL 1980

Figure 1



GULF OF ST LAWRENCE AND ATLANTIC
AREA UNDER LICENSE

Figure 2

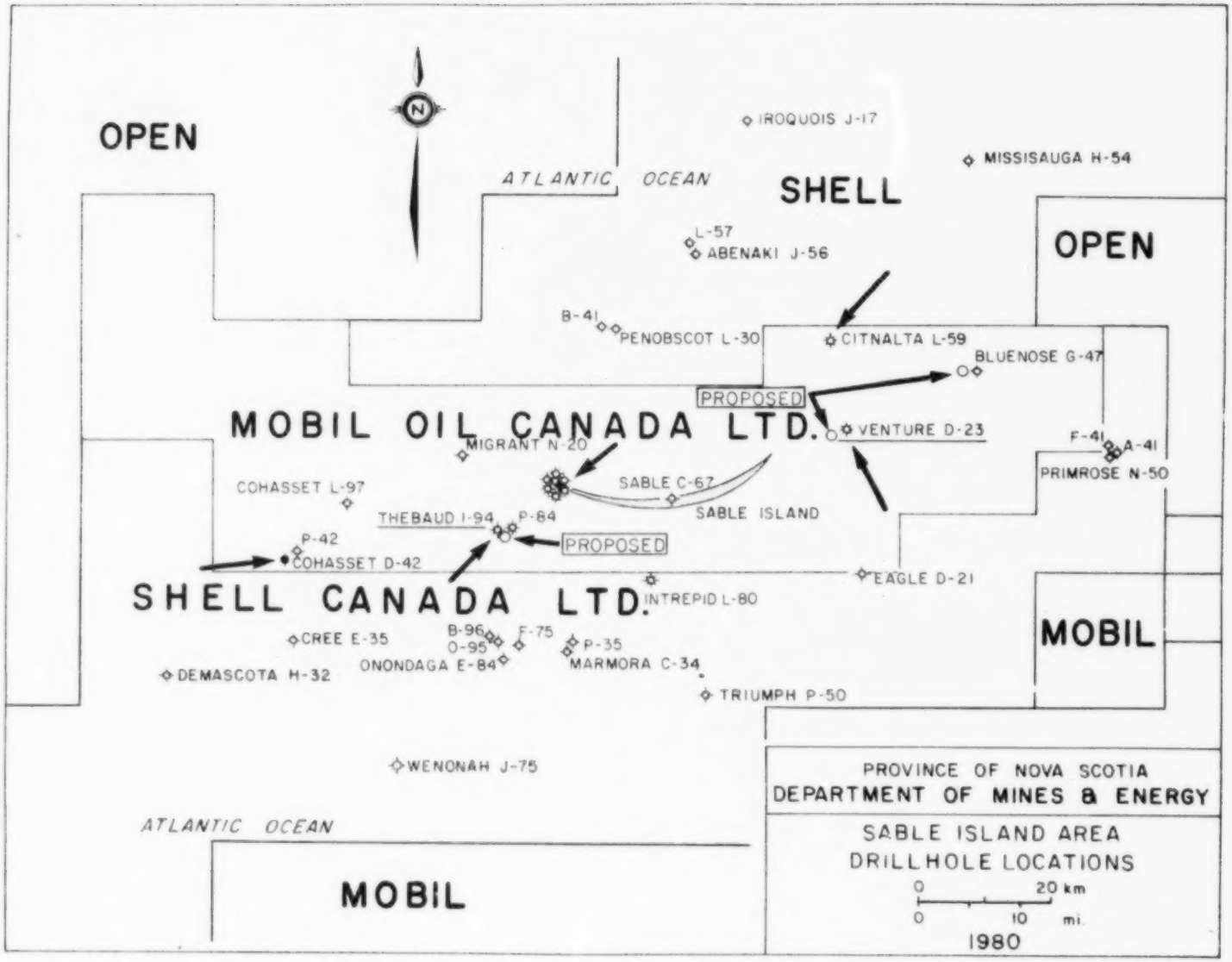
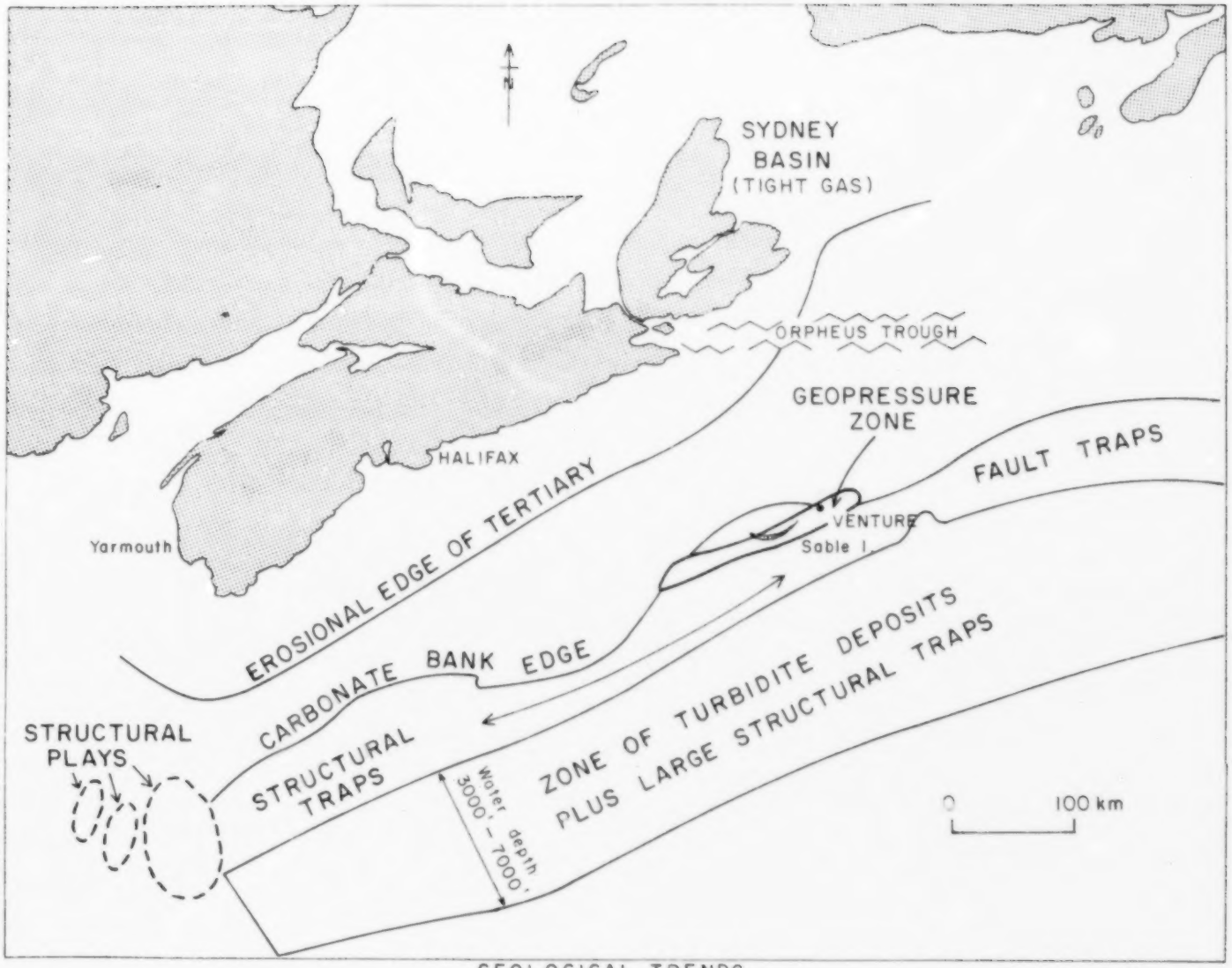

OPEN
IROQUOIS J-17
MISSISAUGA H-54
ATLANTIC OCEAN
SHELL
L-57
ABENAKI J-56
OPEN
B-41
PENOBSCOT L-30
CITNALTA L-59
BLUENOSE G-47
PROPOSED
MOBIL OIL CANADA LTD.
VENTURE D-23
F-41
A-41
PRIMROSE N-50
MIGRANT N-20
COHASSET L-97
SABLE C-67
SABLE ISLAND
THEBAUD I-94
P-84
P-42
COHASSET D-42
PROPOSED
EAGLE D-21
SHELL CANADA LTD.
INTREPID L-80
MOBIL
CREE E-35
B-96
O-95
F-75
P-35
ONONDAGA E-84
MARMORA C-34
DEMASCOTA H-32
TRIUMPH P-50
WENONAH J-75
PROVINCE OF NOVA SCOTIA
DEPARTMENT OF MINES & ENERGY
ATLANTIC OCEAN
SABLE ISLAND AREA
DRILLHOLE LOCATIONS
MOBIL
0 20 km
0 10 mi.
1980

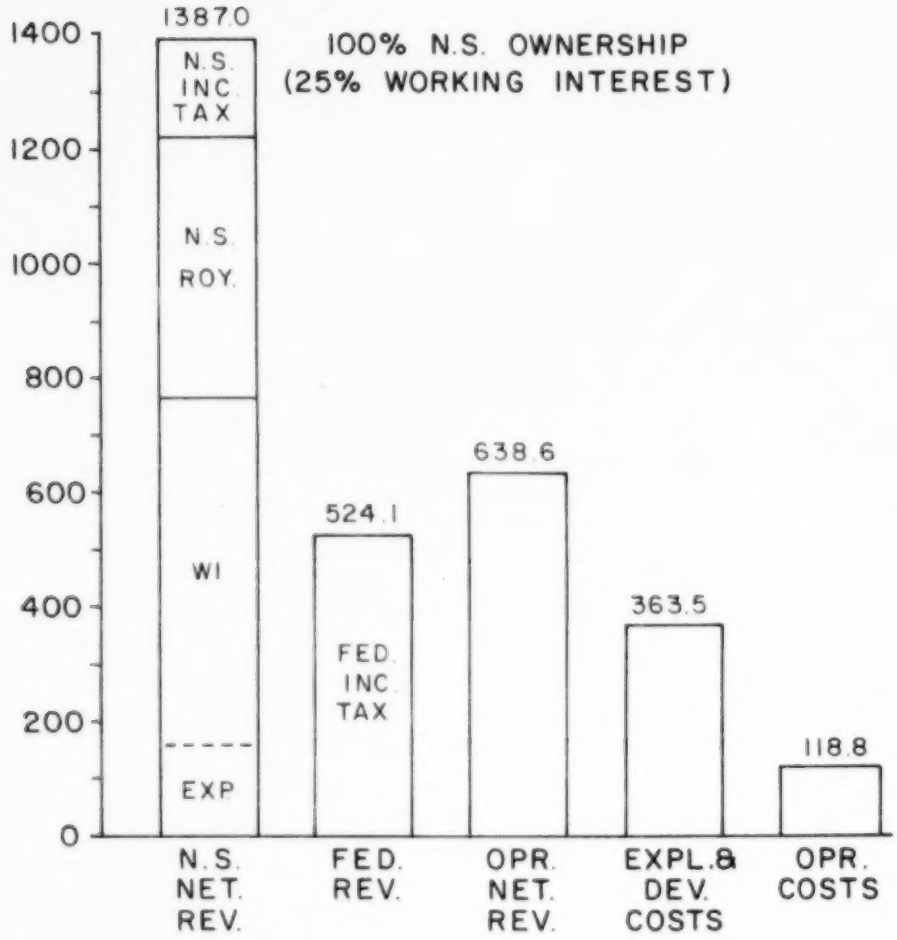
Figure 3



GEOLOGICAL TRENDS
"SCOTIAN SHELF"

Figure 4

REVENUE DISTRIBUTION (P.V. @ 18%)
SAMPLE GAS FIELD: RESERVE 2.0 TCF
PRODUCTION LIFE - 16 YEARS
GROSS REVENUE = 3032 MILLION



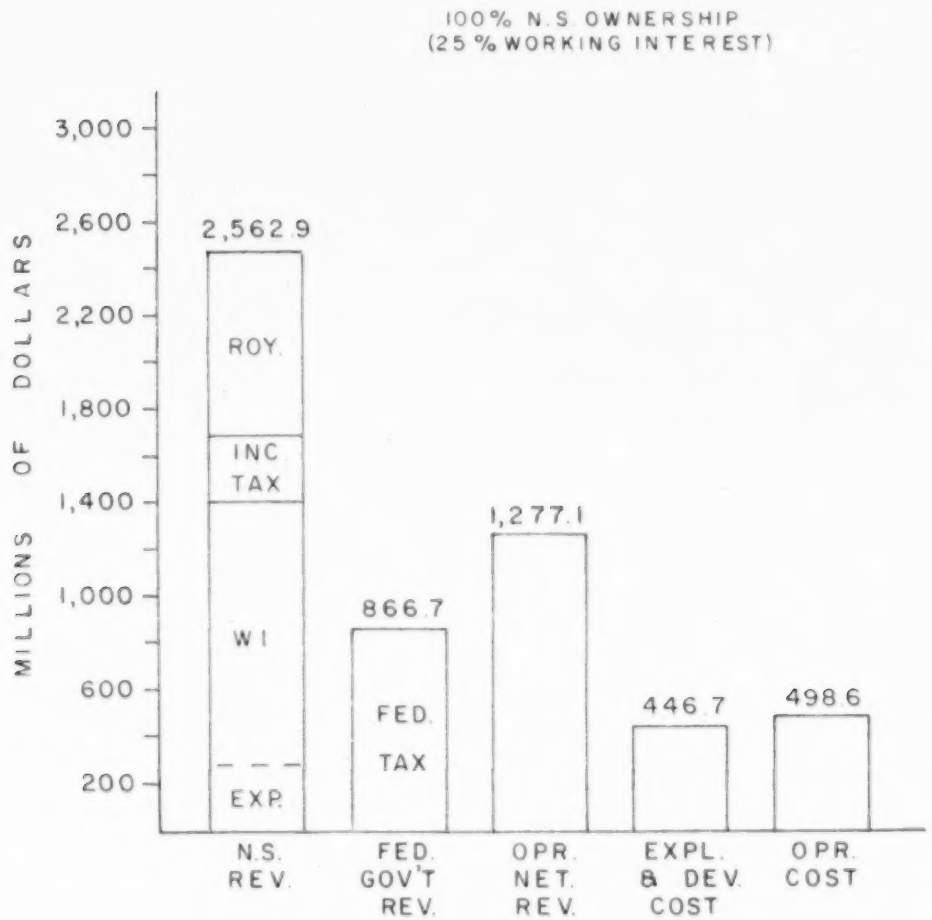
NOTES:

1. INCOME TAX TO GOVERNMENTS MAY BE REDUCED THROUGH REINVESTMENT IN EXPLORATION AND DEVELOPMENT.

2. OTHER TAXES MAY BE APPLIED DOWNSTREAM IN MYRIAD WAYS, E.G. TAX ON EXPORTED OIL AND GAS: TAXES LEVIED ON PRODUCTS.

Figure 5

REVENUE DISTRIBUTION
SAMPLE OFFSHORE OIL FIELD: RESERVE 495MM bbls
GROSS REVENUE = $ 5,652.03 MILLION



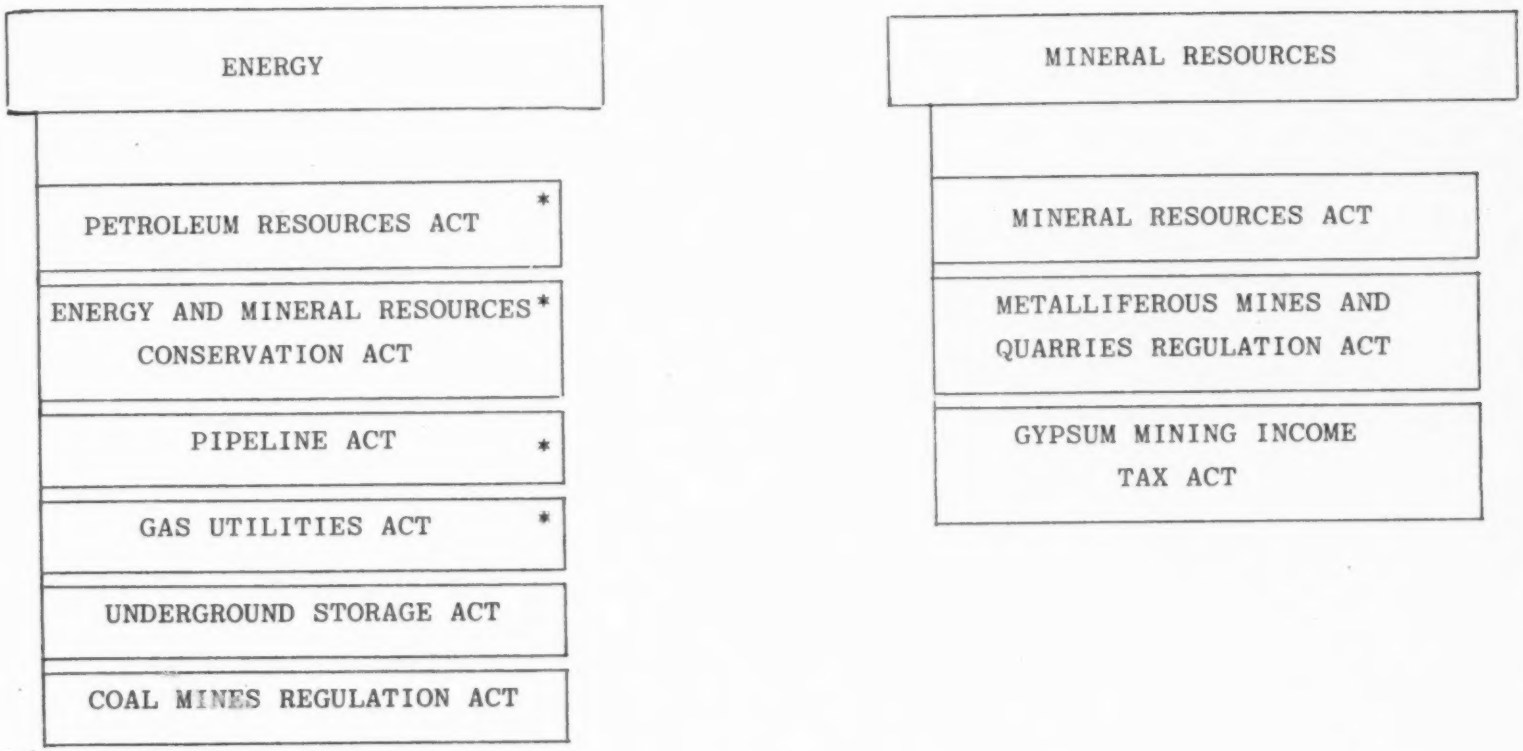
NOTES: 1. INCOME TAX TO GOVERNMENTS MAY BE REDUCED THROUGH REINVESTMENT IN EXPLORATION AND DEVELOPMENT.

2. OTHER TAXES MAY BE APPLIED DOWNSTREAM IN MYRIAD WAYS: E.G. TAX ON EXPORTED OIL AND GAS, TAXES LEVIED ON PRODUCTS.

Figure 6

PROVINCE OF NOVA SCOTIA

ENERGY AND MINERAL RESOURCE LEGISLATION



* New Legislation

Figure 7

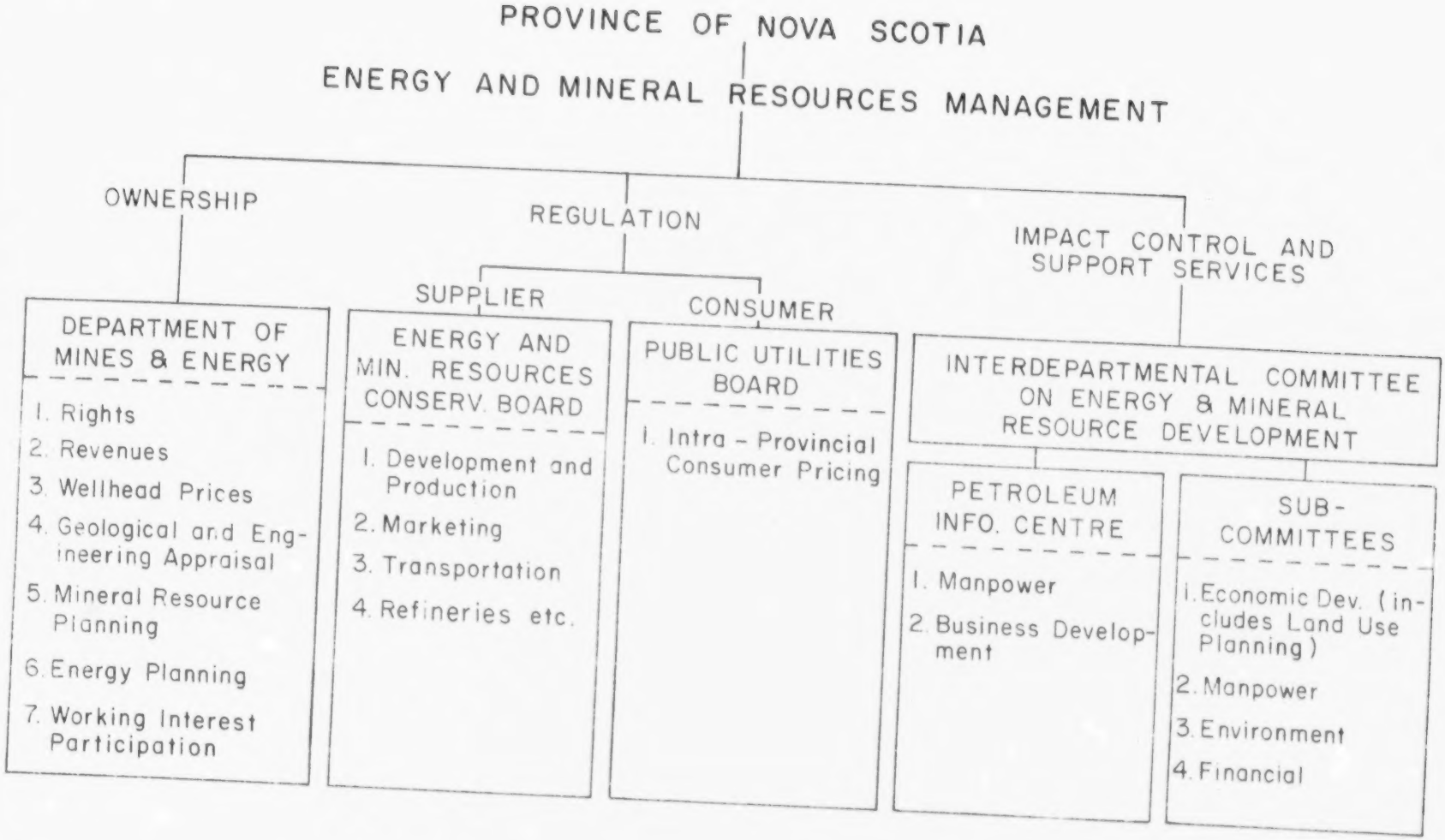

PROVINCE OF NOVA SCOTIA
ENERGY AND MINERAL RESOURCES MANAGEMENT
OWNERSHIP
REGULATION
IMPACT CONTROL AND SUPPORT SERVICES
SUPPLIER
CONSUMER
DEPARTMENT OF MINES & ENERGY
1. Rights
2. Revenues
3. Wellhead Prices
4. Geological and Engineering Appraisal
5. Mineral Resource Planning
6. Energy Planning
7. Working Interest Participation
ENERGY AND MIN. RESOURCES CONSERV. BOARD
1. Development and Production
2. Marketing
3. Transportation
4. Refineries etc.
PUBLIC UTILITIES BOARD
1. Intra - Provincial Consumer Pricing
INTERDEPARTMENTAL COMMITTEE ON ENERGY & MINERAL RESOURCE DEVELOPMENT
PETROLEUM INFO. CENTRE
1. Manpower
2. Business Development
SUB-COMMITTEES
1. Economic Dev. (includes Land Use Planning)
2. Manpower
3. Environment
4. Financial

Figure 8

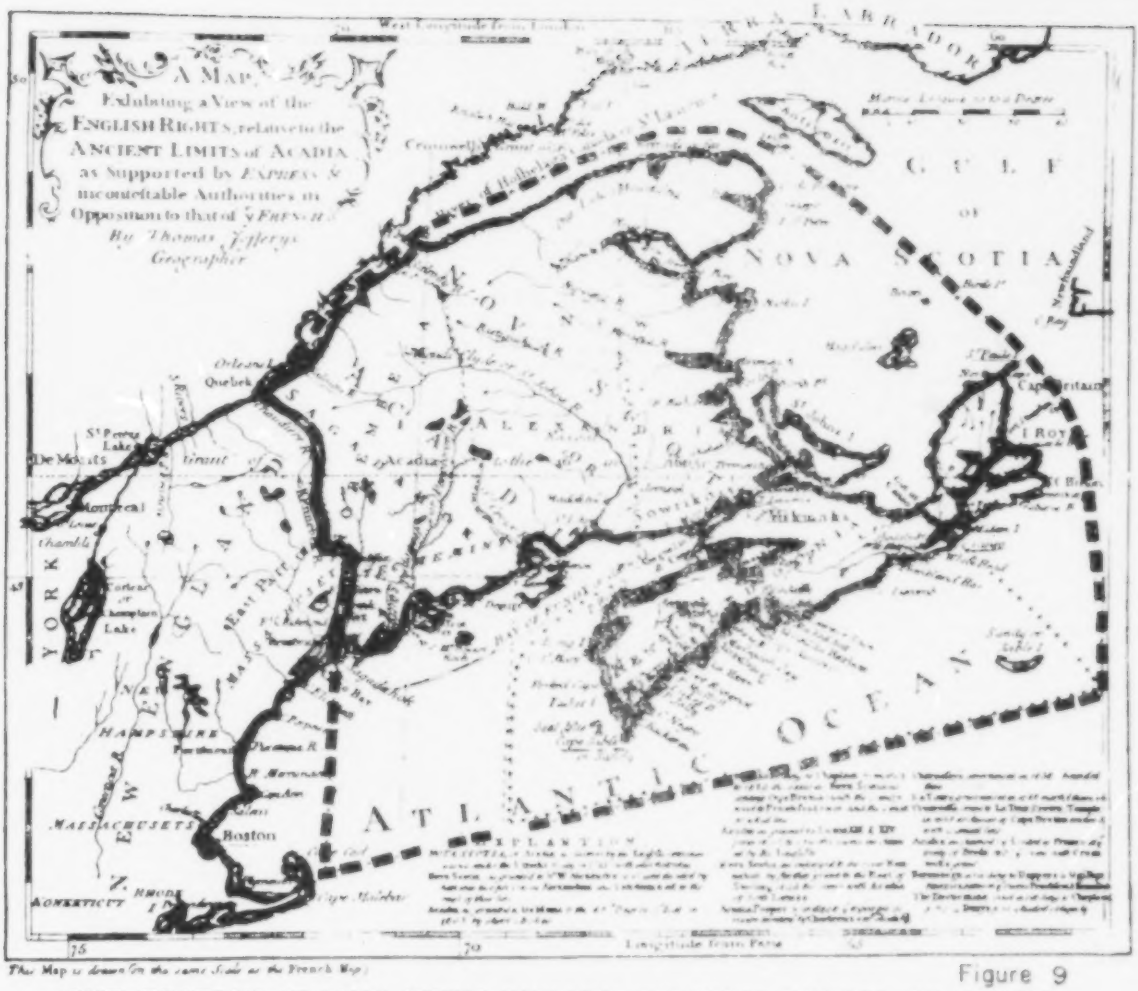
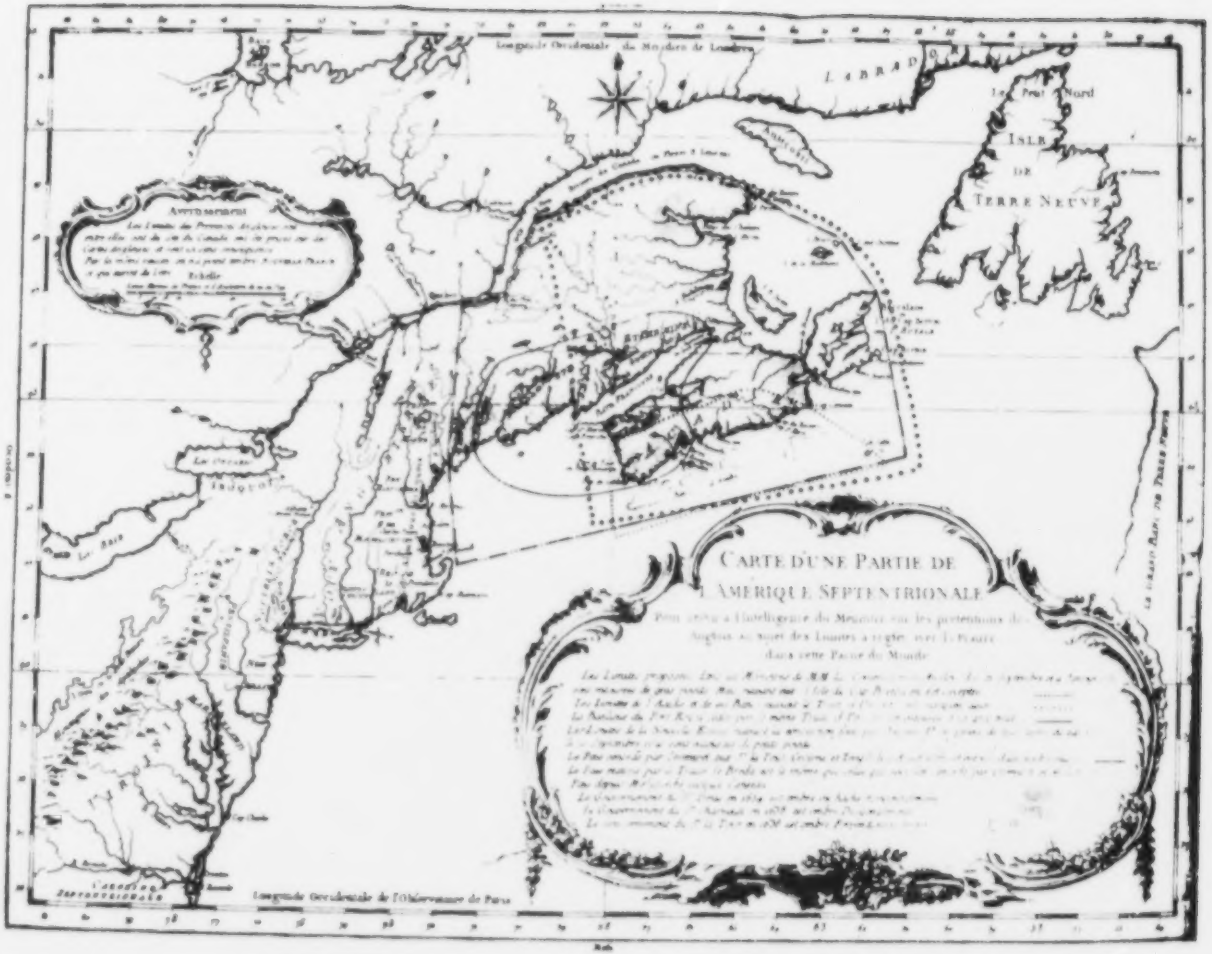


Figure 9

THE BRITISH CLAIMS WITH REGARD TO NOVA SCOTIA OR ACADIA

In its original form this map was first published in "The Memorials of the English and French Commissaries concerning the limits of Nova Scotia or Acadia [and St. Lucia]," London, 1755. The present map is a slightly revised copy from "General Topography of North America and the West Indies," by Thomas Jefferys, London, 1768. Courtesy of Library of Congress

from Maxwell Hicks Savelle, The Diplomatic History of the Canadian Boundary, 1749 to 1763, copyright 1940 by the Carnegie Endowment for International Peace, copyright renewed 1968 by Max Savelle, New York: Russell & Russell, 1968.



THE FRENCH CLAIMS WITH REGARD TO ACADIA

From: "Mémoires des Commissaires du Roi et de ceux de sa Majesté Britannique, sur les possessions & les droits respectifs des deux Couronnes en Amérique; avec les actes publics et pièces justificatives. Tome premier, contenant les Mémoires sur l'Acadie & sur l'isle de Sainte-Lucie." A. Paris, de l'Imprimerie Royale. MDCCLV. Courtesy of Yale University Library. from Maxwell Hicks Savelle, The Diplomatic History of the Canadian Boundary, 1749 to 1763, copyright 1940 by the Carnegie Endowment for International Peace, copyright renewed 1968 by Max Savelle, New York: Russell & Russell, 1968.

Figure 10

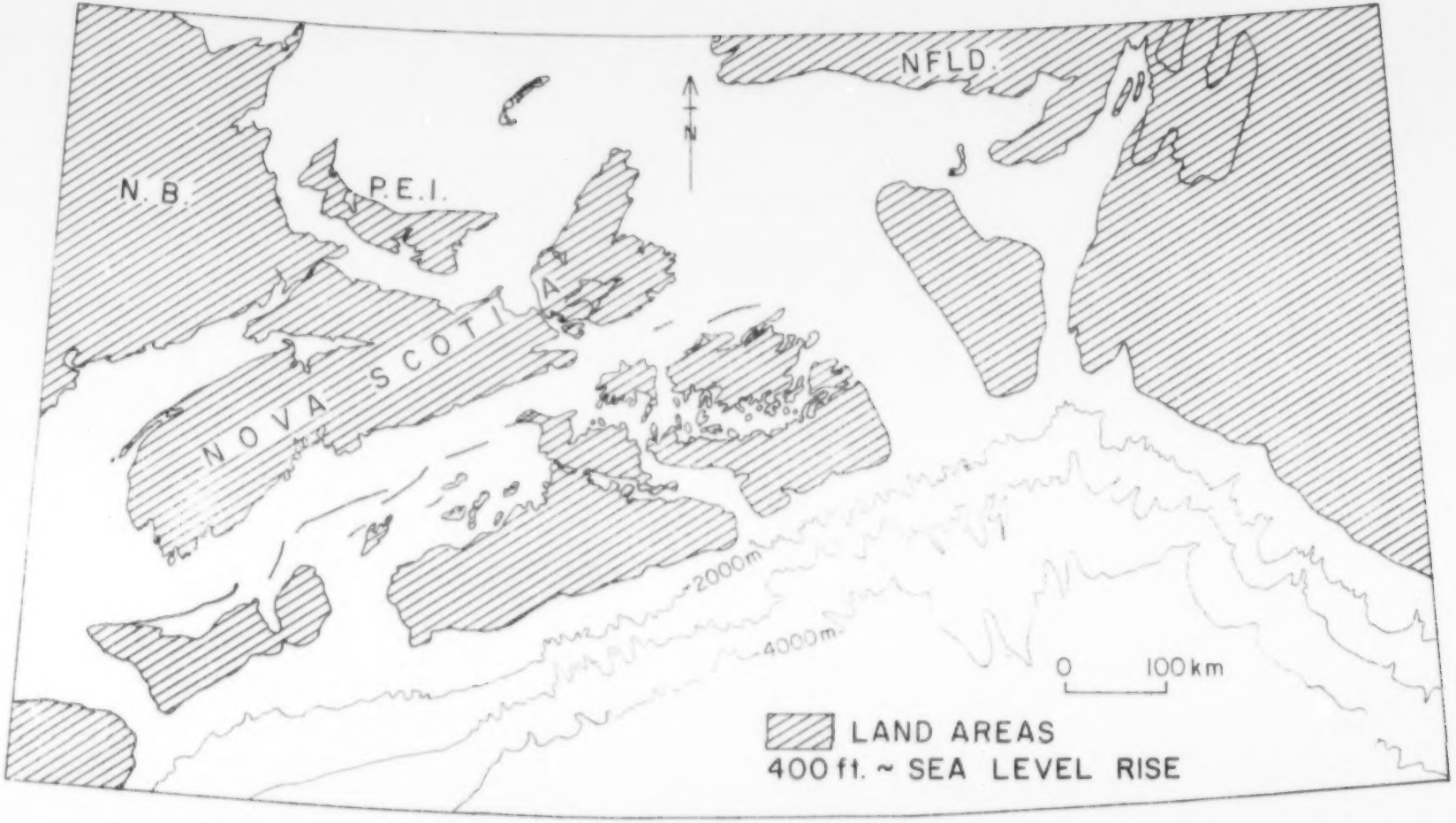


Figure II

18,000 YEARS BEFORE PRESENT

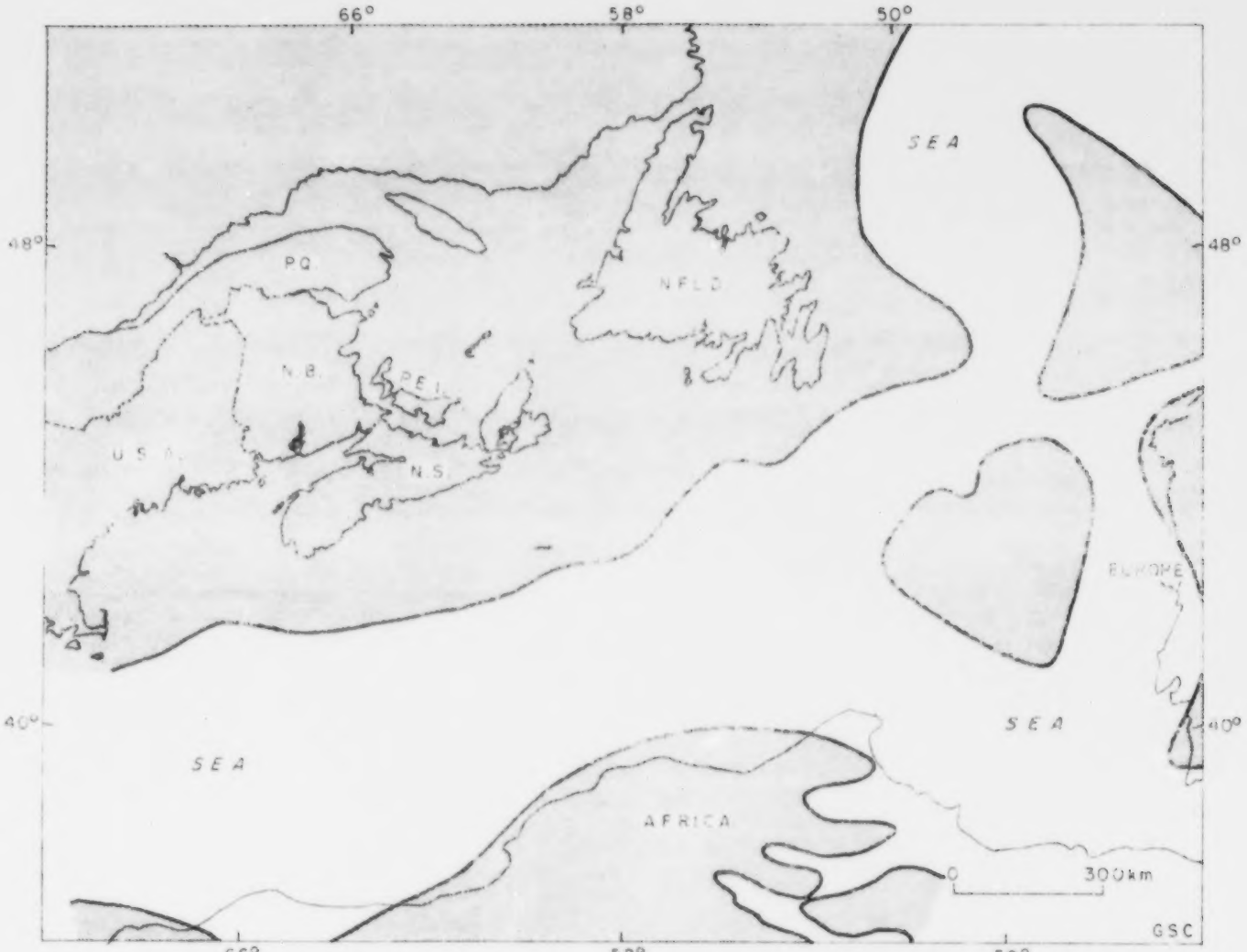


Figure 12

LAND AREA 150 MILLION YEARS BEFORE PRESENT

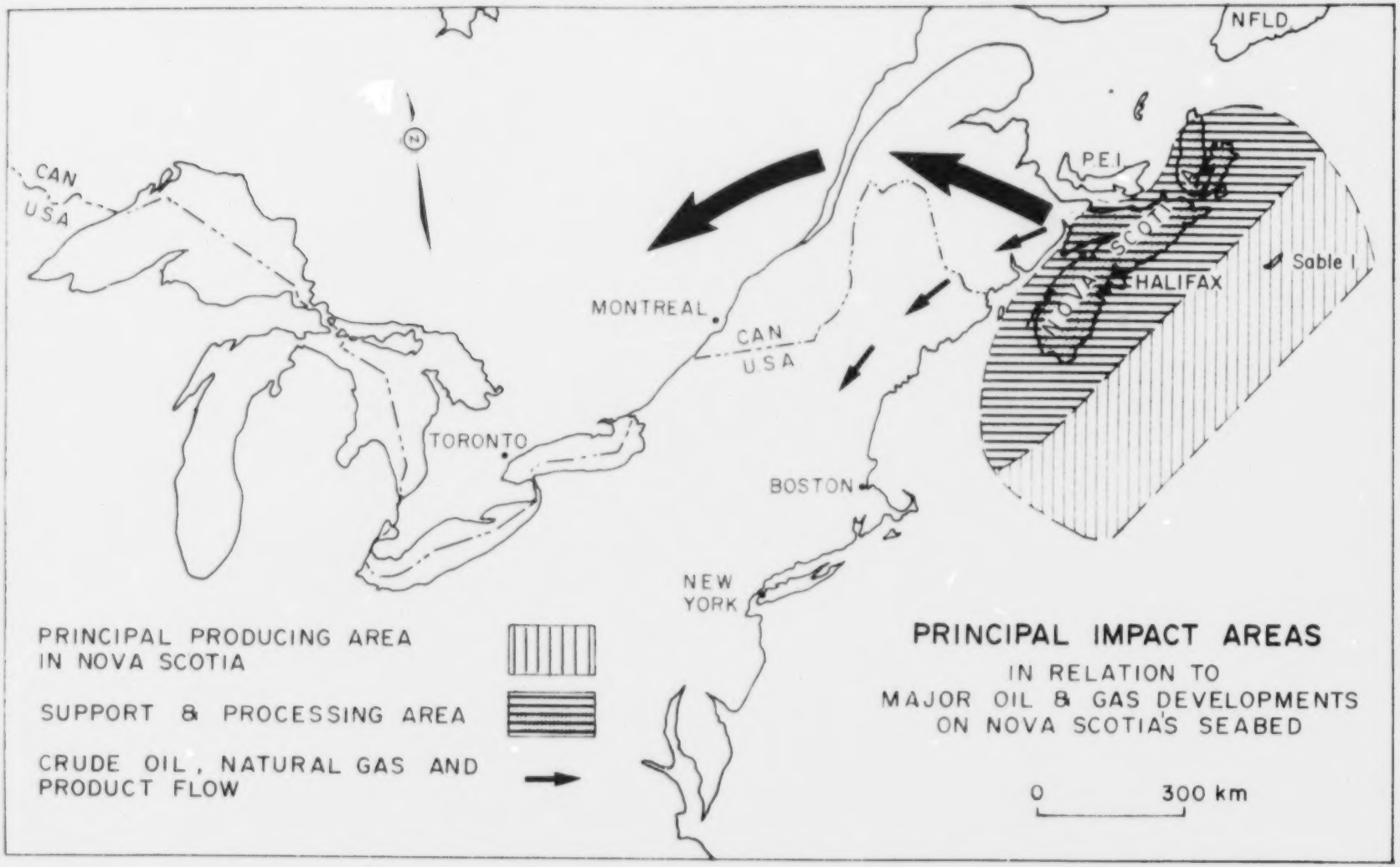

NFLD
PEI
CAN
USA
Sable I
HALIFAX
MONTREAL
CAN
USA
TORONTO
BOSTON
NEW
YORK
PRINCIPAL PRODUCING AREA
IN NOVA SCOTIA
SUPPORT & PROCESSING AREA
CRUDE OIL, NATURAL GAS AND
PRODUCT FLOW
PRINCIPAL IMPACT AREAS
IN RELATION TO
MAJOR OIL & GAS DEVELOPMENTS
ON NOVA SCOTIA'S SEABED
0
300 km

Figure 13

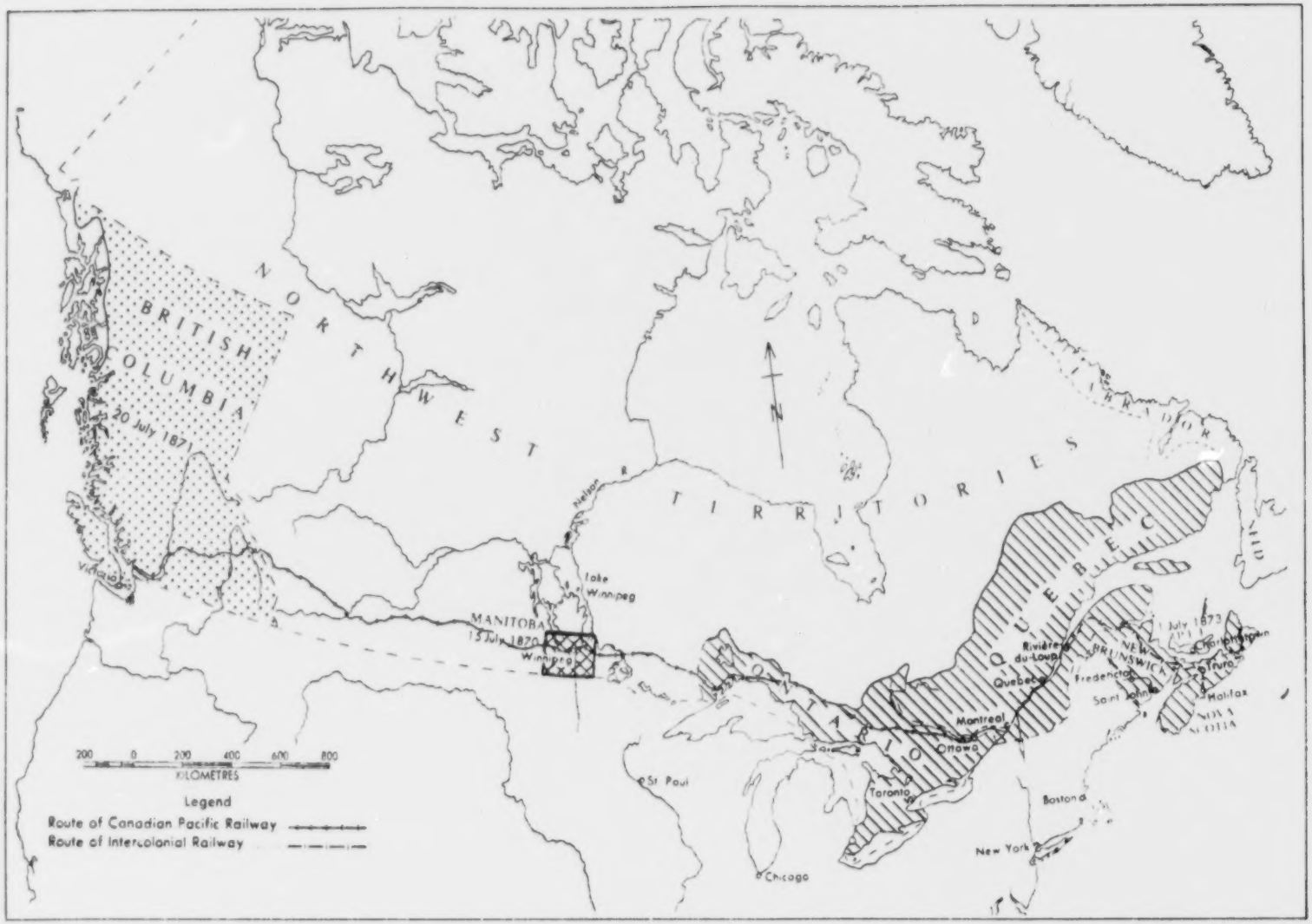


Figure 14

PROVINCIAL BOUNDARIES – 1873

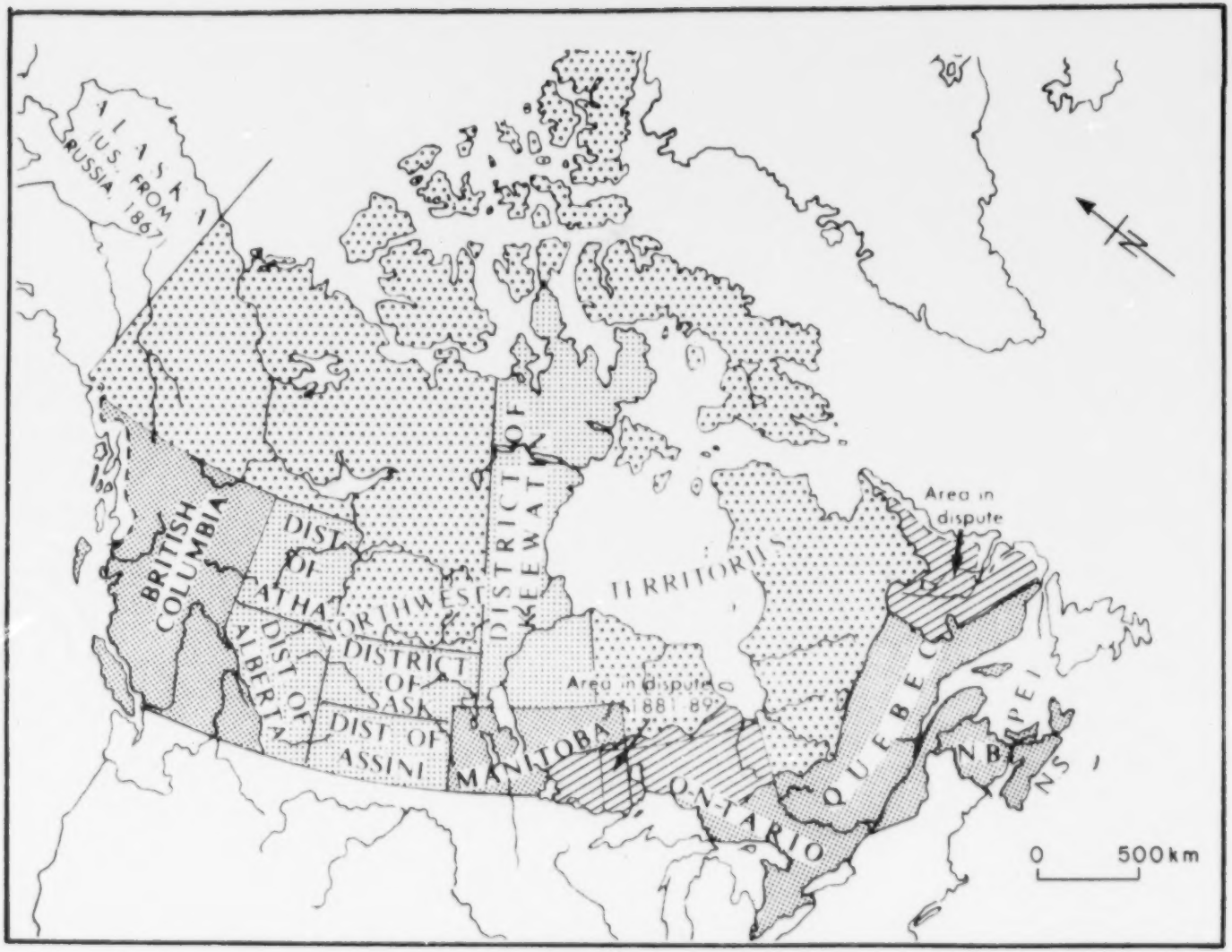


Figure 15

PROVINCIAL BOUNDARIES – 1882

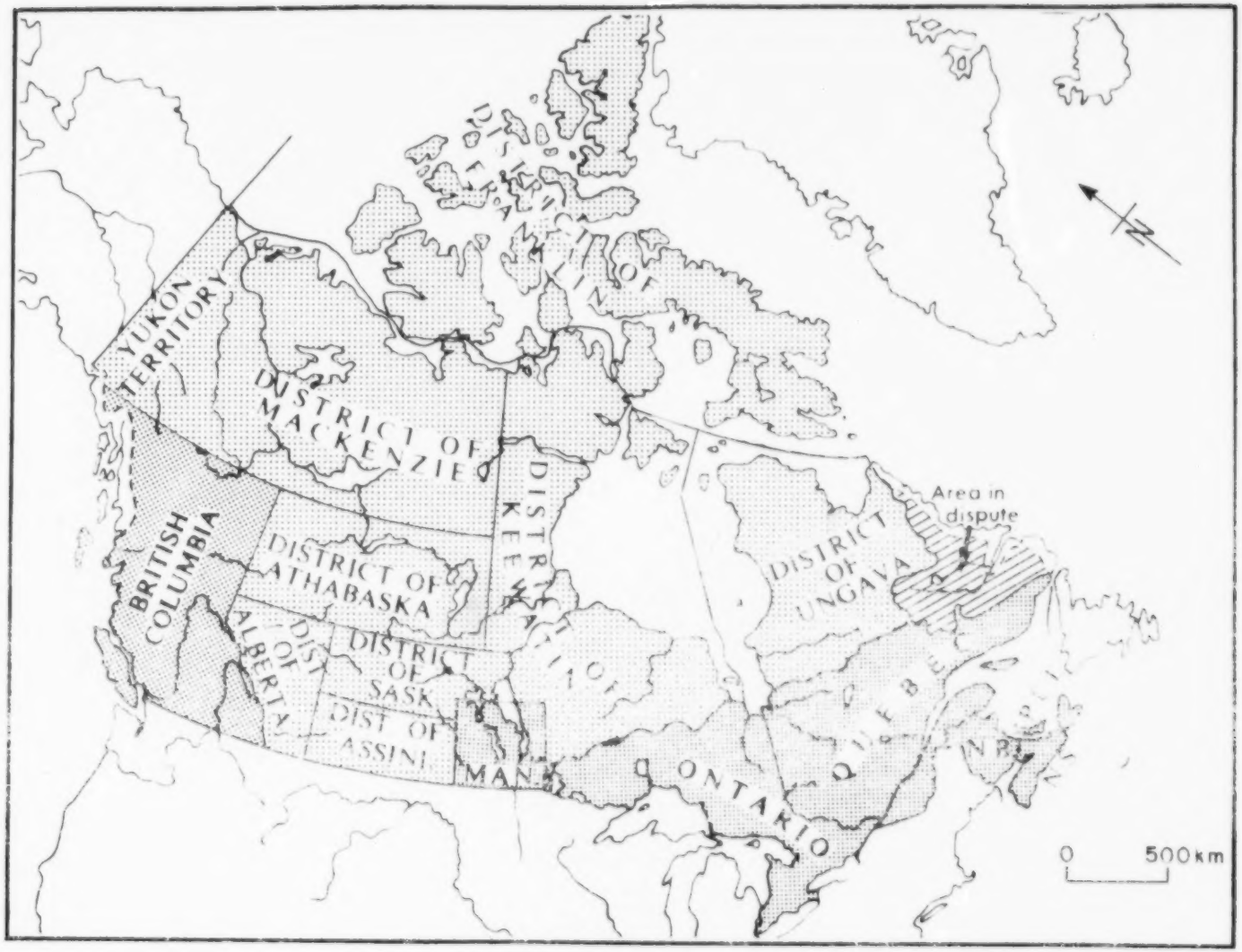


Figure 16

PROVINCIAL BOUNDARIES – 1898

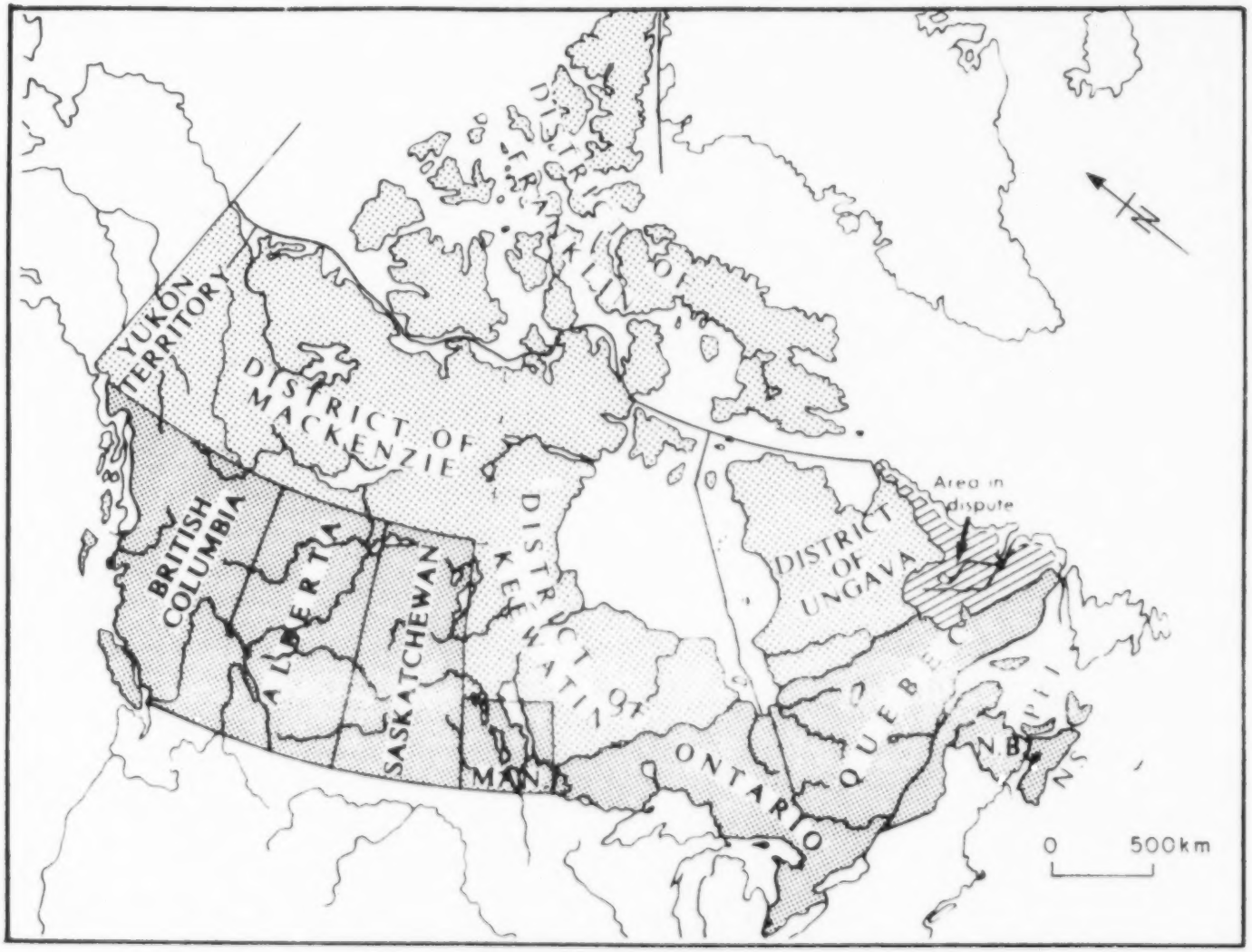


Figure 17

PROVINCIAL BOUNDARIES – 1905

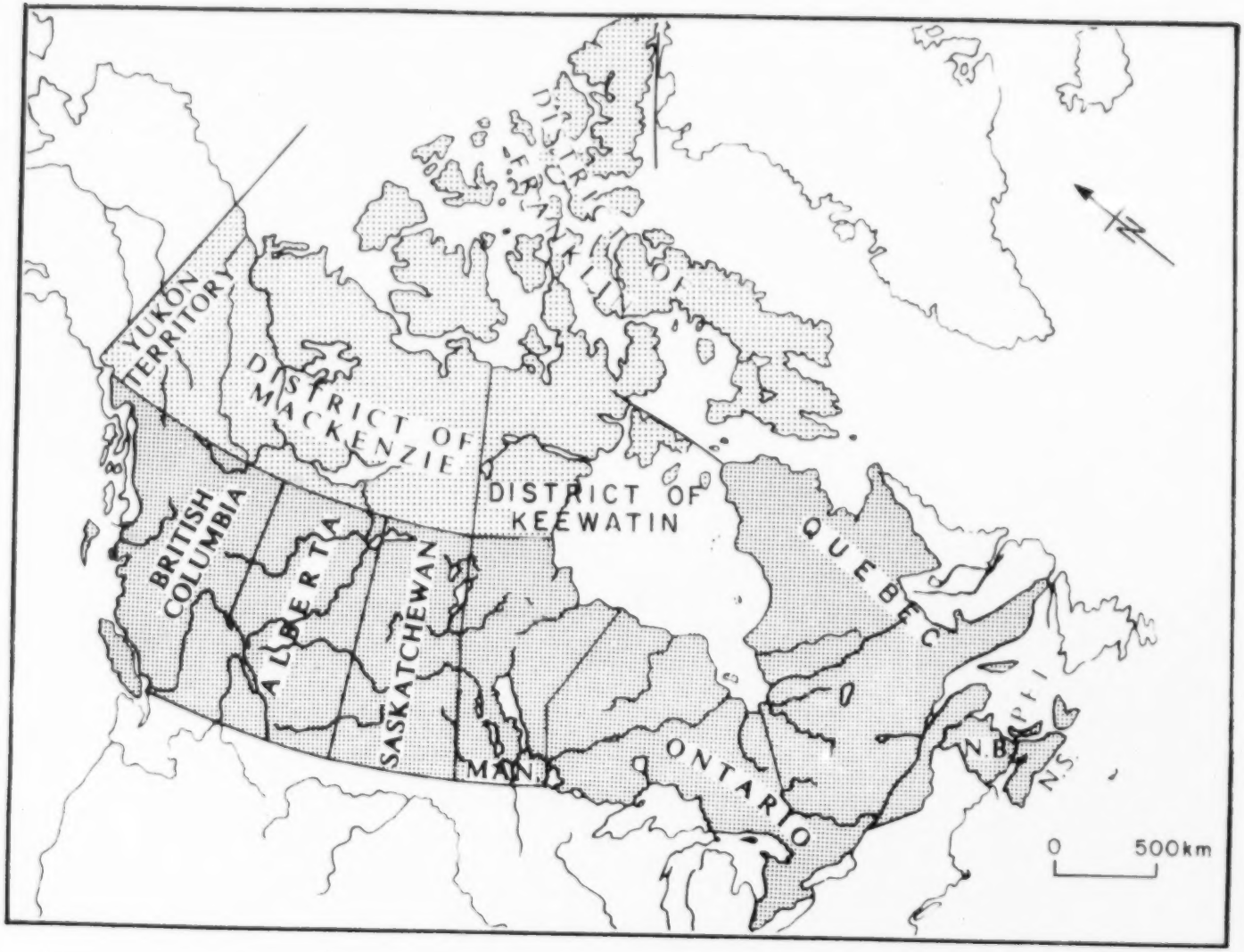
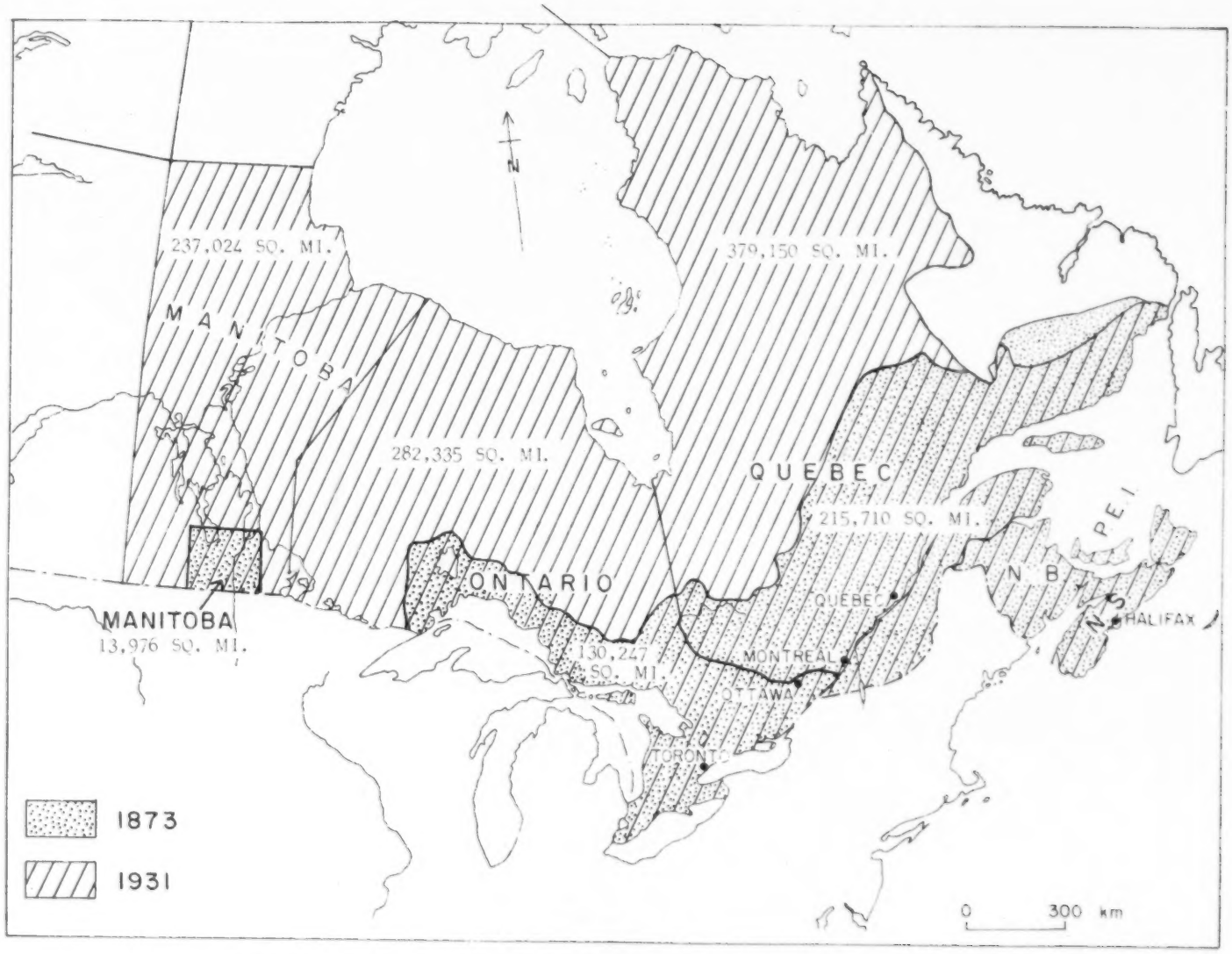


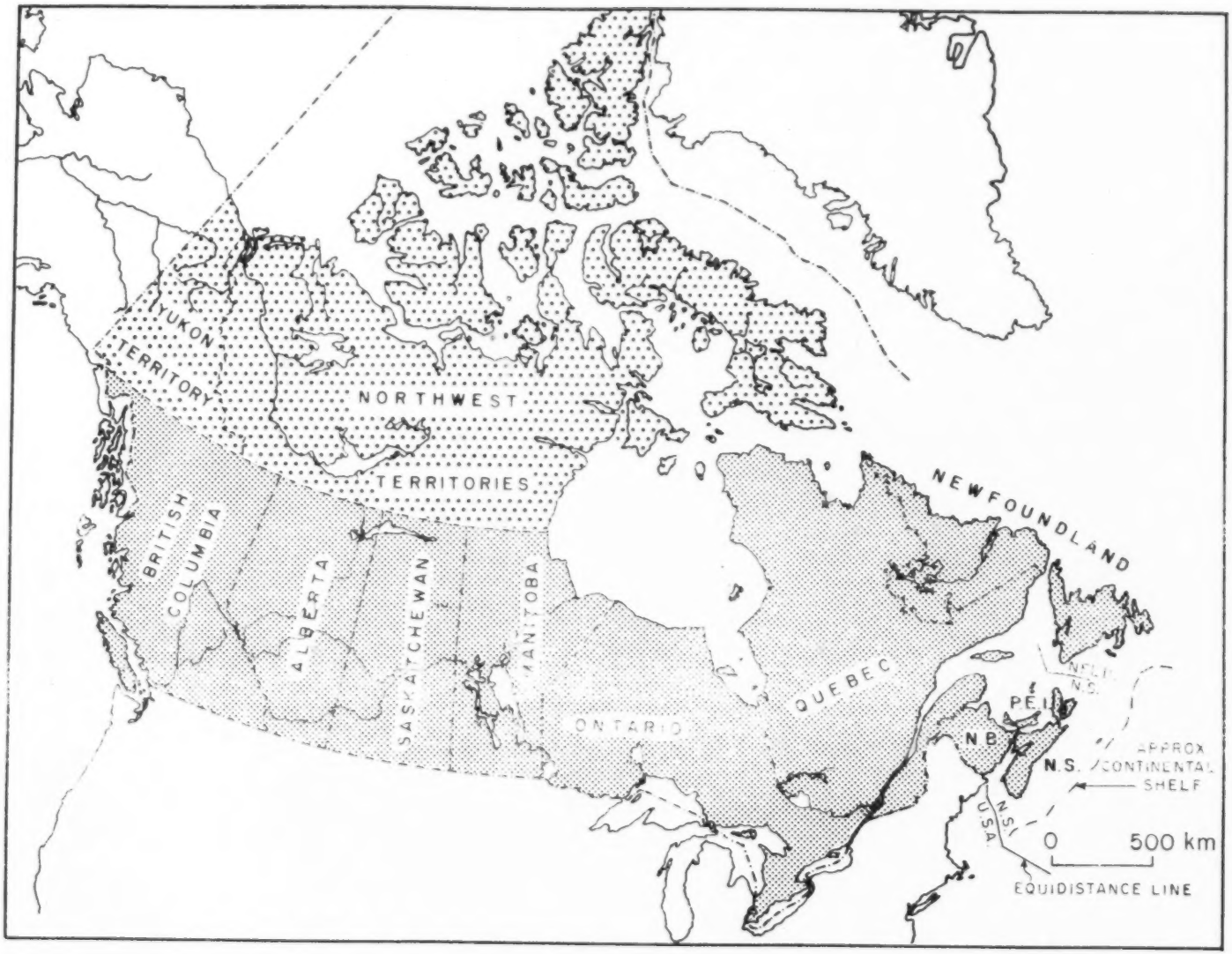
Figure 18

PROVINCIAL BOUNDARIES – 1931



TERRITORIAL ADDITIONS TO THE PROVINCES, 1873-1931

Figure 19



CANADA 1980

Figure 20

SEABED	AREA OF SEABED (SQ. MILES)	AVERAGE DEPTH (FEET)	GREATEST WATER DEPTH (FEET)
LAKE SUPERIOR	31,700	489	1300
LAKE HURON	23,000	195	750
LAKE ERIE	9,910	62	210
LAKE ONTARIO	7,340	283	802
TOTAL	71,950		
PROVINCE OF ONTARIO (@ APPROX. 1/2 OF TOTAL)	36,000±		
NOVA SCOTIA'S CONTINENTAL SHELF	50,000±	250±	1100

GREAT LAKES - NOVA SCOTIA SHELF PHYSICAL COMPARISON Figure 21

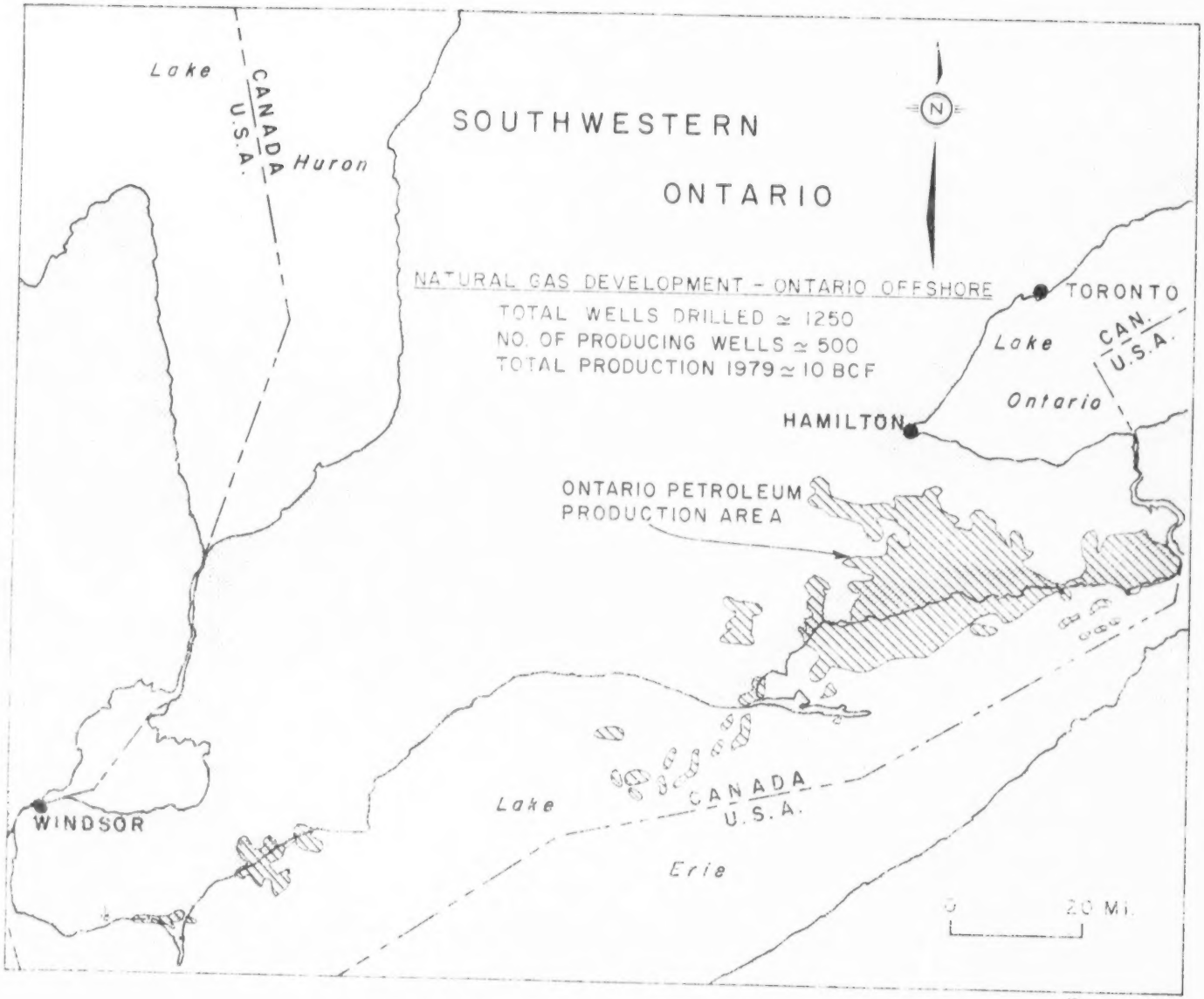
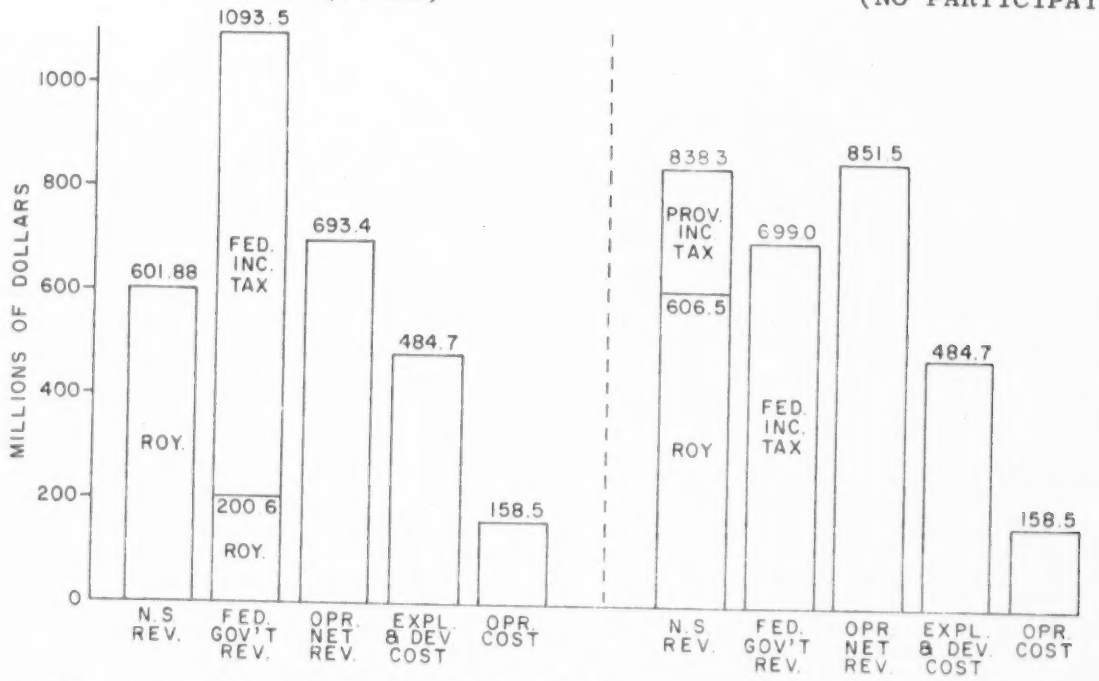

SOUTHWESTERN
ONTARIO
N
NATURAL GAS DEVELOPMENT - ONTARIO OFFSHORE
TOTAL WELLS DRILLED ≃ 1250
NO. OF PRODUCING WELLS ≃ 500
TOTAL PRODUCTION 1979 ≃ 10 BCF
Lake
Huron
CANADA
U.S.A.
TORONTO
Lake
Ontario
CAN.
U.S.A.
HAMILTON
ONTARIO PETROLEUM
PRODUCTION AREA
WINDSOR
Lake
Erie
CANADA
U.S.A.
0
20 Mi.

Figure 22

REVENUE DISTRIBUTION (P.V. @ 18%)
SAMPLE GAS FIELD: RESERVE 2.0 TCF
PRODUCTION LIFE - 16 YEARS
GROSS REVENUE $3032 MILLION

1977 MEMO OF UNDERSTANDING
(75-25)

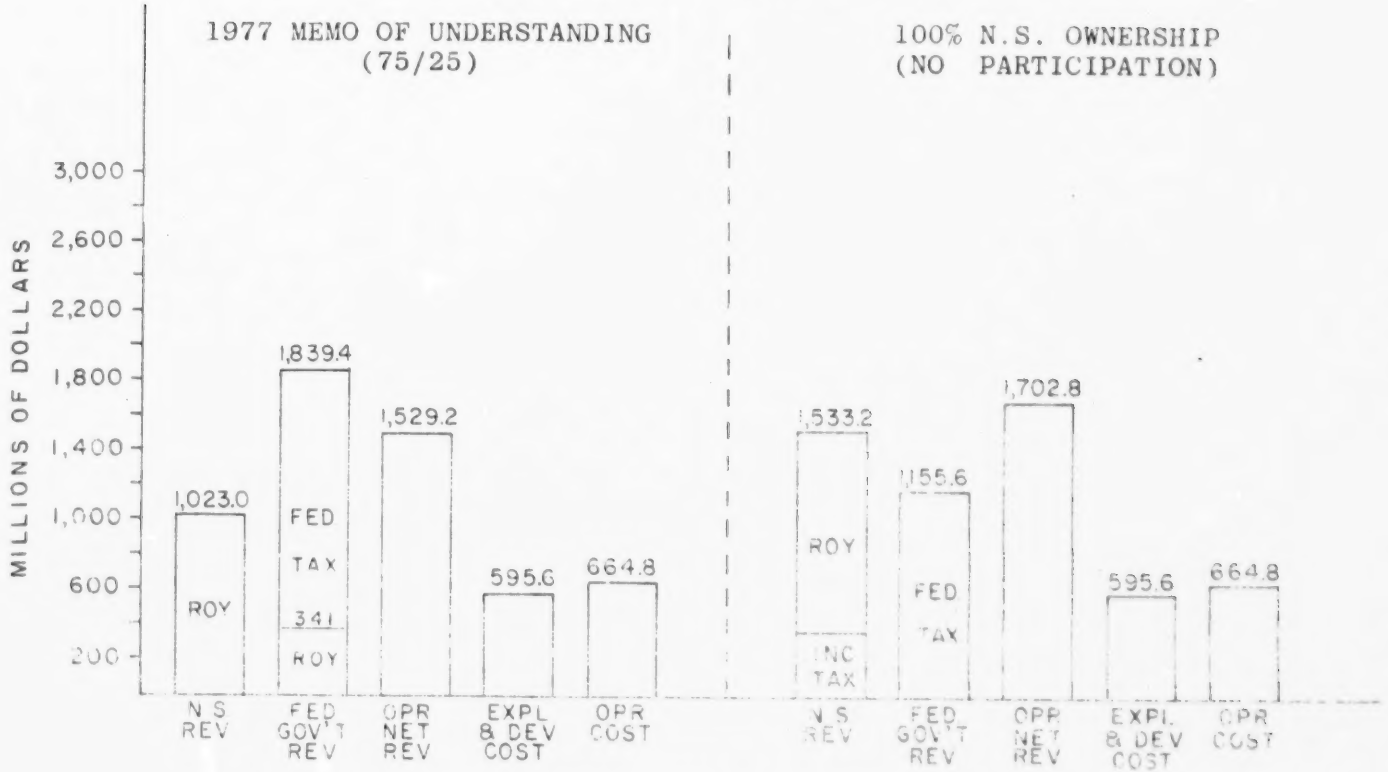
100% N.S. OWNERSHIP
(NO PARTICIPATION)



NOTES:
1. INCOME TAX TO GOVERNMENTS MAY BE REDUCED THROUGH REINVESTMENT IN EXPLORATION AND DEVELOPMENT.
2. OTHER TAXES MAY BE APPLIED DOWNSTREAM IN MYRIAD WAYS: E.G. TAX ON EXPORTED OIL AND GAS, TAXES LEVIED ON PRODUCTS.
3. NO PIR HOLIDAY IS ASSUMED FOR FEDERAL ADDITIONAL ROYALTY.

Figure 23

REVENUE DISTRIBUTION
SAMPLE OFF SHORE OIL FIELD: RESERVE 495 MM bbls
GROSS REVENUE = $5,652 MILLION



NOTES: 1. INCOME TAX TO GOVERNMENTS MAY BE REDUCED THROUGH REINVESTMENT IN EXPLORATION AND DEVELOPMENT.

2. OTHER TAXES MAY BE APPLIED DOWNSTREAM IN MYRIAD WAYS: E.G. TAX ON EXPORTED OIL AND GAS, TAXES LEVIED ON PRODUCTS.

3. NO PIR HOLIDAY IS ASSUMED FOR FEDERAL ADDITIONAL ROYALTY.

Figure 34